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# THE NATION'S HEALTH

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# THE NATION'S HEALTH

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# MODERN MEDICINE

A Monthly Magazine of Medical & Health Progress for Physicians  
& for Others Interested in Administrative, Industrial  
& Social Health Problems

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Volume III

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Number 1

## THE HEALTHIEST YEAR

THE year just closed will probably be recorded as the healthiest year in history. Figures from important centers and dependable sources indicate a death rate lower than that of 1919—when only 12.87 per thousand died,—the lowest rate ever known for the United States or for any large country in the world.

The principal decreases appear at the present writing to be in tuberculosis, infant diseases, and contagious diseases; but, when the records are definitely made up, we do not doubt that marked decreases will be found in the number of deaths from degenerative diseases. The decrease in tuberculosis has been attributed by Commissioner Copeland of New York partly to the decrease in the use of alcoholic stimulants. If this be so—and we do not doubt it—then how much more may we expect the same cause to affect the rate from degenerative diseases? How much more may we expect also in the future when the elimination of alcoholic stimulants becomes complete and particularly when their chronic effects in the bodies of thousands are eliminated by care or by time?

But the favorable condition for the year disclosed by the mortality statistics are not to be attributed to a single important cause; they are due also to the wider diffusion of health knowledge and the better organization of machinery for the protection and promotion of health. The year 1920 has seen the extension of health education and protective measures more widely and effectively than ever before. The vast war machinery of great welfare agencies, public and private, has begun to function for better health, and the humanitarian spirit which was the marvel of the war has furnished the impetus for a campaign which is being directed against disease.

Public health departments have been more liberally supported and sympathetically helped; public health nurses have increased greatly in numbers and in effectiveness of attack; hospitals and dispensaries have broadened the concept of their work; health centers have been created as means of education and of coordination of medical facilities; industry has recognized that health is the key to industrial efficiency; rehabilitation of the disabled has become firmly fixed as a social policy; and the physicians and surgeons, broadened by the war contacts with humanity in the mass, have found a new zeal for service to all the people. Probably never before have so many causes conspired in a single year for health. We see the effects in lives saved and disabilities prevented or cured. Moreover, the effects are cumulative. Results of the work of 1920 will be reflected in succeeding years. We do not doubt that we are merely in the beginnings of organization for better health, the results of which will be reflected in a constantly decreasing disability and mortality rate.

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## NATIONAL AID FOR MATERNITY

THE new year is ushered in by the enactment of the Sheppard-Towner bill providing national aid for maternity. The bill passed the Senate on December 16 with amendments which will doubtless be adjusted in conference between the two houses. In all probability the bill will be a law by the time this issue reaches the reader.

The essential feature of this new act is the appropriation of federal money to the states on condition that the states receiving the money appropriate a like amount for the organization of facilities for the education and care of mothers before and during childbirth. The primary aim is to

provide for those who are remote from modern facilities for prenatal, natal, and postnatal care. It means eventually that maternity care will be extended to every expectant mother, including nursing service, medical attendance, and hospital care when necessary. It means a vast educational campaign for the instruction of mothers in prenatal and postnatal care conducted under public auspices.

The new law has a significance far beyond the limits of present appropriation and plans. It means the organization of medical service on a vaster scale than has ever before been attempted by the American public. The mobilization of medical skill for one great social purpose—maternity—will point the way to inevitable extensions, especially in the provision of infant and child care.

### DEPARTMENT OF WOMEN IN INDUSTRY

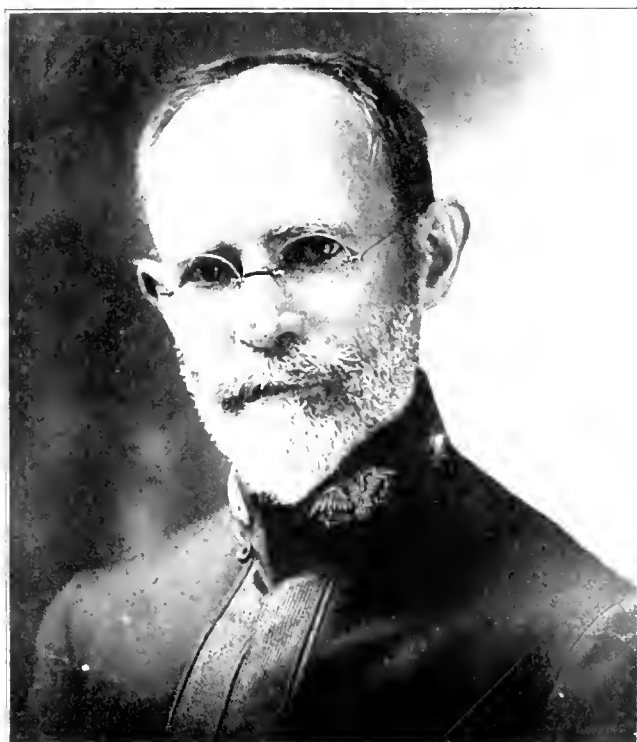
**P**RESIDENT Wilson has appointed Miss Mary Anderson as the head of the new Bureau of Women in Industry, created by Act of Congress in the Department of Labor to perpetuate a similar bureau instituted as a war measure. The new director has been the efficient acting head of the Bureau for more than a year and her appointment to the permanent post gives entire satisfaction to those who are interested in the progress of the work.

Almost coincidentally with the creation of the new bureau comes the suggestion that it be made a bureau of the new department of welfare which, it is understood, will be created at the next session. With this suggestion the advocates of the bureau properly disagree. There is no good ground for considering the protection of women workers as a welfare undertaking any more than there is for considering the whole Labor Department as a department of welfare. No such line should be drawn between men and women workers. The new bureau should remain in the Department of Labor.

### HEALTH IN INDUSTRY DEPARTMENT

**T**HE department of Health in Industry is edited, beginning with this issue, by the American Association of Industrial Physicians and Surgeons, and becomes the official voice of the Association. It will afford an open forum for the rapid dissemination of accepted methods in the industrial medical field. The editors of MODERN MEDICINE, recognizing the great value of industrial health work, welcome the opportunity afforded the readers of this magazine to keep in touch authoritatively with the modern movement for industrial efficiency through better health.

### REAR ADMIRAL EDWARD RHODES STITT



Underwood & Underwood

**T**HE new surgeon general of the Navy, Rear Admiral Edward Rhodes Stitt, is well known to the physicians of the country as an educator, as a man of remarkable attainments in laboratory research, especially on tropical diseases, and as an inspiring leader in medical science. A long record of responsibility and achievement is behind Rear Admiral Stitt as he enters his new office.

### ECONOMY IN HEALTH BUDGETS

**A** PROPER estimate has never been made of the per capita outlay which it would be profitable to spend for health. That there would be a wide margin between such a figure and the actual budgets appropriated may safely be assumed. To the officials responsible for the data on which health expenditures are based the aggregate looms large, while there is usually a total lack of reliable data on the cost to the community of failure to make adequate provision.

A case in point is furnished by the story of one epidemic printed on another page of this issue from figures on the cost of an epidemic of typhoid fever in Salem, O., furnished by State Health Commissioner A. W. Freeman, who is finishing the installation of a modern health system in Ohio. This cost price of a single epidemic affords the strongest possible plea for budgets generous enough to care for the simplest health needs and illustrates the value of practising so-called economies such as the city of Salem made.

# PRENATAL AND POSTNATAL SOCIAL SERVICE\*

BY A. LEVINSON, CHICAGO

THE author of the popular picture, "Seven Moments in a Woman's Life," should have included one more great moment in a woman's life: Pregnancy. This period lasting nine months is full of joy and sorrow, of expectation and trepidation, of hope and fear. There is something inside of the woman constantly enlarging her, but what is it? Man or monster, male or female, normal or abnormal? As time goes on, the woman's heart becomes more unstable, the expectancy more tense. To relieve this woman, to assist her financially, physically, or morally, constitutes a service not only to the future mother, but also to the child and to society.

For thousands of years babies have been coming into this world, yet to this day the exact embryological processes of the fetus are unknown nor can we foretell the sex, the health, or the development of the new being. We are confronted with a problem of life as perplexing and as mysterious as life itself. All that can be done is to prepare for the appearance of the new being, to receive it with open arms, and make life as pleasant for it as possible.

## Human Inheritance Complex

It is an old saying, but it holds good to this day, that the preparation for a baby must be started with the grandparents; that unless the grandparents were healthy the grand child will not be healthy. There are, however, a few immediate preparations left for the mother to carry out, and in this she can be assisted by others, by friends, by neighbors, by social workers.

The mother should lead a normal life during pregnancy. Over-excitement and dissipation, the curse of modern life in general, are bound to have a deleterious effect on the future baby. Hard work in a factory would obviously be of no benefit to the baby. The other extreme, complete rest, as practised by some of the wealthy mothers, is, to say the least, of no benefit. It seems that the

*Notwithstanding the fact that we possess fairly accurate knowledge of the fundamental factors of heredity and of the nurture which is calculated to give full expression to the desirable characters of inheritance, society has been slow to appreciate these facts and to profit by this knowledge. The baby is helpless. If the mother does not intelligently care for it, and develop in it such habits as will serve in future adjustments, the child will die, or its life will be doomed to an inadequacy and misery. Many a disease may be prevented by the instruction and supervision of the expectant mother. Only when all women are trained for motherhood will child nurture bring its full fruition in healthy childhood.*

woman who does her ordinary routine work all through pregnancy is the wisest. This should be pointed out to the pregnant woman who is at a loss what course is the best for her to pursue.

The housing problem, so acute in the large cities, should be brought home to the expectant mother. It is true that some babies who have no light, nor air in the house develop to be strong men and women, but this cannot be argued as a rea-

son for bringing a child into the world in a house where there is no light, if circumstances permit better accommodations. It occurs too often that the darkest and the smallest room in the house is put aside for a bedroom for the baby, while the airiest and lightest room of the house is carefully attired with furniture for the occasional guest. It is for the social worker to point out where such inconsistencies in logic result from the style epidemic.

The necessity of consulting and engaging a physician early should be brought home to the mother. The social worker should endeavor to convince the mother of the importance of frequent physical examinations, urinalyses, and blood pressure readings during pregnancy. No matter how intelligent the woman, she may be in need of instruction in that regard. Also, the social worker should point out to the expectant mother the necessity of caring for her teeth. The tradition "for every child a tooth" has sacrificed many a tooth in the mouth of pregnant woman.

A Wassermann test on the blood of every pregnant woman and possibly, also, of the father of the future baby would diminish the incidence of lues in this world or at least would tend to diminish its severity. If the Wassermann test were made as a routine, objections would be obviated on the part of the mother or father.

## Fear Complexes Pernicious

The question of whether maternal impressions affect the baby might be considered beside the mark in this advanced age, but the fact remains that many expectant mothers worry about a horse

\*The ninth of a series of articles dealing with medicosociologic problems in the field of pediatrics prepared for the pages of MODERN MEDICINE, by Dr. Levinson.

they saw racing by, or a cat climbing a tree; and, while such worries may not affect the child directly, they may easily serve to make a nervous wreck of the mother, which in turn affects the nervous system of the child. The social worker may tactfully disillusion the mother on these points, and thereby save her and the future baby much hardship. Likewise attention needs to be given to the many other complaints of the expectant mother so that they may either be corrected by a physician or their ineffectiveness brought out. Here the social worker can render important service.

The preparation of clothing for the future baby is a matter of moment. The next door neighbors may have an exaggerated or a minimized notion of its importance. The social worker should know just what a new-born baby needs, and should give the mother authoritative information in this regard.

### Supervision Supports the Mother

It is strange that the women who, because of lack of home facilities need the hospital most, are the very ones that do not care to go to a hospital for their confinement. A social worker may tactfully point out the advantages of a hospital to the women, thereby diminishing the chances for a puerperal infection. Sometimes the expectant mother cannot go to a hospital because she has no place to leave the other children, in which case great service can be rendered by finding a temporary home for the children. Where the woman does not consent to go to a hospital, the home may be put into shape for obstetrical work. There is no need of elaborate surgical appliances. A rubber sheet, a few pounds of newspaper, some cotton, lysol, and hot water will suffice.

The immediate care of the newborn, the dropping of silver nitrate in the baby's eyes, the general cleanliness, and especially the asepsis of the naval, properly belong to the doctor or nurse. The doctor in charge, however, may have forgotten to impress the importance of those things on the mother and there may be no nurse on the case, when again the initiative may be left to the social worker to attend to these matters. When the social worker is a nurse, it is an ideal combination.

The hundred and one questions concerning the new-born baby, the regulation of room temperature, the kind of a nipple and bottle to use, the amount of clothing to put on the baby, the amount of water the child needs—these are all questions of great importance to the mother, no matter how trivial they may appear to the experienced social worker.

As the baby's days advance, the new mother becomes more restless; the baby cries, the baby

draws its legs up, the baby falls asleep during nursing, the baby does not want to take the bottle. If only there could be someone to help the young mother carry the burden of all these problems that seem ridiculous to the outsider, but which make life more or less miserable to the mother! The grandmother may do it, but her attitude may spoil the youngster. The average grandmother is usually so overcome by the joy of seeing her life perpetuated that she fondles the baby too much. The neighbors, if not too busy to "look in," are not always well informed. The social worker, next to the grandmother, is best fitted for the task.

Then come the never ending questions as to the feeding. As we have pointed out elsewhere, most mothers want to nurse their babies; but not every mother is able to do so, so she is in need of further guidance. The social worker may perform a real service in such a case by stopping in with some sound advice.

Finally, and most significant is the mental attitude of the mother. Only one who is constantly in touch with young mothers is in a position to realize how many women break down with the birth of the first child—a collapse that is both physical and mental. It is a sad commentary on the average preparation for motherhood that many mothers become so overwhelmed by the new animal,—by its care and by their worries over it—that the anxiety becomes pathological, and just at the time when every fiber in the body should work toward one goal, the taking care of the baby, the mother becomes melancholic, does not sleep and does not eat, to her own detriment and that of her baby. This frequent occurrence is an outgrowth of modern life, of the strain of muscles and nerves before marriage, of the style, of the mode of living; with the result that, instead of being the source of joy and happiness, a baby occasionally brings dissension in a family. This is a tragic fact which should be borne in mind by any one who wants to do social service among young mothers.

### CAUSE OF INFANTILE PARALYSIS

The University of Minnesota has made an announcement as a result of investigations recently carried out that the larva of the bottle fly is responsible for hog paralysis and limber neck in poultry, and that infantile paralysis is traceable to the larva of the green bottle fly. On the basis of this information university officials have sent out a bulletin to farmers urging them to protect their live stock and poultry and possibly give human help by burning and burying deeply all carrion. Results of this work are cited as an additional argument for farm and home sanitation.

It is reported in a statement issued from the Children's Bureau that forty out of forty-eight states have now adopted some form of Mothers' Pensions.



# THE NATIONAL ORGANIZATION FOR PUBLIC HEALTH NURSING\*

BY ELLA PHILLIPS CRANDALL, FORMERLY EXECUTIVE SECRETARY, NEW YORK CITY

THE National Organization for Public Health Nursing exists to define, standardize, and interpret public health nursing, and to encourage and assist in the development of public health nursing, especially along the lines of education and legislation. The term public health nursing is now used to express any one of the following fields of service all of which are embraced in the title, i. e., visiting nursing, prenatal, maternity, infant welfare and pre-school nursing; school and industrial nursing; tuberculosis, venereal disease and other communicable disease nursing. It may, though in a much more limited degree as yet, include mental hygiene nursing. Medical social service work may and usually does form an essential part of all.

In most large cities these activities are still operated under separate managements; but the tendency in small cities, towns, and rural communities is, for obvious reasons of efficiency and economy, toward an amalgamation of agencies and a generalization of service. An essential corollary to the latter should be an adequate consultant or supervisory staff of trained and experienced specialists to safeguard and strengthen the work of the general staff. There are notable instances of large cities adopting the same method with modifications to meet local conditions. While in the great majority of cases these projects are still conducted under private auspices, there are instances of public direction and support of each form of work mentioned above—city and town, county, state and federal agencies now being represented. However, with few exceptions, public funds are appropriated for what is known as educational and preventive nursing as distinct from curative or bedside care. But the precept of "teaching by doing" is winning its way and slowly making for coordination of curative and preventive work.

*Improvement in health conditions largely depends upon a matter of perspective. Early efforts were directed singly against separate phases of the problems of public health. Reasons of efficiency and economy demanded amalgamation of agencies and broadened generalizations of service.*

*There gradually evolved the ideal of a central health service adequately administered by persons whose competence was in accord with their several responsibilities.*

*Standardization has largely grown out of the coordinating activities of the National Organization for Public Health Nursing, whose efforts toward coordination are the best earnest of its increasing usefulness.*

Public Health Nursing is thus far defined in order that it, in turn, may indicate the scope of the National Organization for Public Health Nursing which is a non-administrative, consultant body. The organization is unique among nursing associations in that it is composed of non-professional as well as nurse members who are actively engaged or otherwise interested in the administration and practice of public health nursing or

the education of public health nurses. On September 1, 1920, it had 3,717 individual and 187 corporate members.

It was organized in June, 1912, and in the following November opened a small office in New York City and employed an executive secretary and one stenographer. It was immediately endowed by the Cleveland Visiting Nurse Association with an insignia, a quarterly magazine, together with the voluntary services of an editorial staff and with assurance of maintenance; and, also, with a financial sponsor who accepted the responsibility of raising its budget for the first two years. In the same spirit Miss Yssabella G. Waters, author of "Visiting Nursing in the United States and Territories," identified her statistical work with the Organization and has contributed her services and that of her clerical staff to the present time. Its object as stated at that time was as follows:

The object of this Organization shall be to stimulate responsibility for the health of the community by the establishment and the extension of public health nursing; to facilitate efficient cooperation between nurses, physicians, boards of trustees, and other persons interested in public health measures; to develop standards and technic in public health nursing service; to establish and maintain a central bureau for information, reference and assistance in matters pertaining to such service; and to publish periodicals or issue bulletins from time to time to aid in the accomplishment of the general purpose of this Organization.

Its functions have more recently been summarized as follows (being an excerpt from the "Agreement" entered into in January, 1920, by the National Tuberculosis Association, the American Red Cross, and itself):

\*The fifth of a series of articles on national health organizations prepared especially for the pages of MODERN MEDICINE.

### I. Educational.

(1) Assisting in the organization and improvement of post-graduate courses in public health nursing.

(2) Assisting in the production of more public health nursing teachers through a special scholarship fund.

(3) Encouraging introduction of instruction in subjects relating to public health nursing and field work into the curricula of qualified training schools.

(4) Promoting special institutes for public health nurses already in the field.

(5) Conducting a circulating package library, advisory service to libraries concerning public health nursing literature and bibliographies.

(6) Publishing the *Public Health Nurse*, a monthly magazine.

### II. Recruiting.

(1) Encouraging graduate and student nurses to enter public health nursing.

(2) Encouraging high school and college students to enter nursing and to prepare through pre-professional courses. This is being done in cooperation with the other national nursing associations.

### III. Employment.

Maintaining of a limited employment service which could be developed into a national employment clearing house for public health nurses.

### IV. Standardization.

Studying of and assisting in establishing standards of organization, administration, publicity, and financial support, records and reports.

### V. Legislation.

Creating public opinion in favor of and assisting in the enactment of suitable public health nursing legislation, such as the appropriation of public funds for public health nursing, and the creation of divisions of public health nursing within state Departments of Health.

In the beginning, the Organization's methods were frankly propagandist in character, for even the term public health nursing was new in those days and there was relatively little understanding or appreciation even of visiting nursing, from which all the later activities grew, and the newer forms of preventive work were as yet undeveloped. As compared with England and some of her colonies, America was far behind in national development of a service which some day seems destined to become a public utility comparable with the public school system.

### Becomes a Public Utility

In 1910 there were still ten states in which there was not a single public health nurse, and the vast areas of southern mountains and western plains were totally unprovided with nursing care. In 1912 the 899 associations, employing something more than 2,442 nurses, represented all but two states; but were practically unacquainted with each other, and their activities unrelated. The majority kept meager records or none at all; with few exceptions their work was done free of charge and, consequently, was characterized as charity and limited to the dependent classes. Practically all the governing bodies were composed exclusively of women, and men were scarcely interested beyond giving their annual contributions when solicited.

There was practically no literature of American origin. No textbooks had been written and only one formal course of instruction was available, though several informal series of lectures and demonstrations were conducted by a few leading associations. Public health nurses had no place in the programs of the associations devoted to various aspects of the developing national program of public health, although the need of and dependence upon their work was frankly acknowledged. Nurses recognized themselves as an essential part of these various health programs, but also realized they could not function

separately or independently. Such was the status of public health nursing in America in 1912.

Whatever service the National Organization for Public Health Nursing has rendered, in the extension and standardization of the rapidly growing work which it essayed to foster and represent, its officers would not fail to point out that it has built its principles and policies and standards largely upon the experience of the older and well established local associations; and that its influence has been largely shared with and augmented by the Red Cross town and country nursing service (later the Bureau of Public Health Nursing), the Metropolitan Life Insurance Company's nursing service, the Division of Public Health Nursing at Teachers' College, and, more recently, similar departments in other educational institutions. Hence it is impossible to measure or tabulate specifically its record of achievement; but its services have been available to all who wish them, irrespective of membership in the Organization. The Organization has made no effort to dominate or control the policies of local agencies; it has sought rather to guide public opinion.

The Organization began at once to secure corporate memberships in other national health associations and a place on their annual program and in their official journals. It is now represented in the following: American Child Hygiene Association, American Conference on Hospital Service, American Public Health Association, American School Hygiene Association, American Social Hygiene Association, General Federation of Women's Clubs, National Committee for Mental Hygiene, National Committee for Prevention of Blindness, National Conference for Social Work, National Safety Council, National Tuberculosis Association, and the Women's Advisory Council—United States Public Health Service.

In addition to these affiliations, its Executive Secretary serves on the directorates or other administrative committees of the following associations: Board of Trustees, American Hospital Conference; National Committee on Nursing, American Red Cross; Board of Directors, American School Hygiene Association; Sub-Committee on Public Health Nursing, General Federation of Women's Clubs; National Committee for Coordinating Child Health Activities; Joint Committee, Headquarters of National Nursing Associations; National Council, National Social Unit Organization; and on the Advisory Board, Seamen's Service Center.

Up to September 1, 1920, there were sixteen state organizations of public health nursing. In seventeen other states, sections or committees within state associations of graduate nurses had been formed, rather than separate bodies, in order to strengthen the older associations. There is a growing tendency to identify the membership of these state bodies automatically with the National Organization.

### Fundamental Requirements Defined

It has been, for the most part, inexpedient if not impossible to make pronouncements or render more than tentative judgments on many current problems and questions of policy, because there has not been time for accumulation of a sufficient body of experience on which to base more permanent decisions. But the Organization has consistently stood for such fundamental requirements as: Approved methods of raising funds; a fee system for bedside care rather than a free service; extension of service to all, especially those of moderate income; standard rules and regulations governing organization and administration; thoroughgoing records and reports; nurse supervision of staff work; standardized dress; and adequate salaries.

It has also urged the following progressive developments: Coordination with activities of allied agencies, including those supported by public and private funds; recognition of ultimate responsibility of government agencies; administrative advantages of divisions of public health nursing within departments of health; and value of citizens' advisory committees to support public departments of health in the development of public health nursing.

A few examples will best indicate the character of the Organization's service to local communities. In 1916 Los Angeles asked that a secretary be sent to reorganize its municipal nursing service, that city bearing the distinction of having no private public health nursing agencies. The Organization's newly appointed Associate Secretary was detailed for a six months service, during which time she established a complete reorganization of the work and record system, instituted a plan of coordination between the Department of Education and the Department of Health, trained a permanent executive, and laid out a program of further development which has proceeded according to her recommendations.

During 1918 Pittsburgh, where for many years a large number of separate agencies had been conducting various forms of public health nursing without coordination, realized its need of centralized service. The Women's Committee of the Council of National Defense requested the National Organization for Public Health Nursing to send a representative to make a study of its existing agencies and to make recommendations. This was done; and an organizer was secured who spent six months effecting a public health nursing association which was finally launched with the hearty endorsement of the Chamber of Commerce, the Departments of Health and Education, a number of the leading industrial plants, and of the local Red Cross Chapter.

In Rochester, N. Y., the Federation of Social Agencies and the Chamber of Commerce took similar action. In this instance a much less extensive study was required; but two consultation visits were made, an executive was nominated, and later advisory service was rendered.

Westchester County, N. Y., represented by twenty-seven agencies, also made request for a study of needs and possibilities for more and better coordinated service. This study resulted in the formation of a County Federation for Public Health Nursing which has just completed its first year with definite gains toward unity of purpose and with excellent promise of further developments.

The National Organization for Public Health Nursing has been invited by two state departments of health to lay out programs for state wide development of public health nursing. While its staff has as yet been inadequate to grant such an extensive service, it has acted continuously in an advisory capacity to state supervising nurses and other state health officials. Especially is this true in the few states where its plan has been adopted of organizing state committees on public health nursing representing both public and private agencies. These will have later mention.

The service of its Educational Committee and Secretary is perhaps as well known as any other of its activities. This has included consultation visits to State Universities and other educational institutions, with a view to organizing and standardizing post-graduate courses in public health nursing. In this way the experience of one has been made available to all, along the lines of entrance requirements, curriculum content, field work, etc.

The Organization is not only interested in public health nursing education. One of its secretaries has been loaned

to the Central Council on Nursing Education to organize and direct a campaign for recruiting student nurses which has been doing admirable work, with gratifying results, since April, 1920.

### Serves Through Library Centers

Intimately related to the work of the Educational Secretary, and contributing to that of all the Secretaries, is the library. When this department was organized, it was planned that a good collection of current pamphlets and books should be maintained within the New York offices, but in addition that there should be projected into the states some form of library extension work that should represent the National Organization for Public Health Nursing. To this end, state library centers have been established through local library agencies to which nurses may write for both books and pamphlets on community health. Briefly, the main activities of the library department may be described as a pamphlet lending service through the Package Library; an extension service through State Library Centers; a reference service through a special Reference Collection of both pamphlets and books; an advisory service through a section of Book Reviews and Digests contributed monthly to the *Public Health Nurse* magazine.

The official magazine of the Organization, the *Public Health Nurse*, which is now a monthly issue, is justly called a current textbook on public health nursing. It is included with membership benefits. In collaboration with one of the secretaries, it edits a department on nursing in MODERN MEDICINE. The editorial staff is responsible for calling into existence a modest body of literature on public health nursing which was literally non-existent ten years ago.

"Public Health Nursing," by Mary S. Gardner, has, since its publication in 1916, been generally accepted as an authoritative presentation of the subject. A series of textbooks in special phases of public health nursing, under the editorship of Miss Gardner, are now being published by the Macmillan Company.

A unique enterprise which engaged almost the entire time of one secretary and four to six field nurses during 1918 and part of 1919 was three county demonstrations designed to show the value of public health nursing as a means of maternal and infant conservation. These were done under contract with the Federal Children's Bureau and will be reported by the Bureau in due time. The counties were selected with a view to giving wide variation of conditions, methods, and experience. They were Morgan County, Ill., having an absentee owner and Portuguese tenant farmer population; St. Mary's Parish, La., with a large negro population and the negro midwife problem; and Fremont County, Wyo., in which the Wind River Indian Reservation constitutes the larger portion of the population and which embraces two tribes, the Arapahoes and the Schoehenees.

The Indian Commission and the United States Public Health Service have also been interested in this latter.

### War and Foreign Service

The War Service conducted by the Organization is worthy of special mention.

It was responsible for securing a special enrollment of public health nurses in order to reserve them for work in the sanitary zones, in reconstruction work in foreign countries, and to assist in preserving community health regulations and in furnishing nursing care at home, where medical and nursing forces were seriously depleted.

Its Associate Secretary served as Organizer and Di-

rector of Public Health Nursing in the Sanitary Zones under the United States Public Health Service. Its executive secretary acted as secretary of the three Committees on Nursing of the Council of National Defense.

It secured a large share of a special war service budget for these committees and contributed an extensive publicity program designed to greatly increase the number of candidates for nursing schools.

It suggested to the Red Cross the scholarship fund of \$150,000 for nurses returning from military duty, which has served a double purpose of providing for nurses who had surrendered their previous positions, and increasing the supply of qualified public health nurses to meet an enormously increased demand.

It secured the preparation and circularization of a special series of lectures on Venereal Diseases for Public Health Nurses and for senior students.

The Organization receives many calls from foreign nations, such, for example, as St. John's in the Wilderness, Alaska; Massachusetts-Halifax Health Commission, Canada; Victorian Order of Nurses, Canada; Peking Union Medical College, China; Maison de Sarte Hospital, France; Women's Christian Temperance Union, India; Inspector d'Hygiene of Gant, Belgium. Notable among these has been a call from Mrs. Mary Breckenridge, nurse in charge of public health nursing under the American Committee for the Devastated Regions of France to supply her with all possible current reports, pamphlets and leaflets on public health nursing, and to send her catalogues and announcements of post-graduate courses in public health nursing, and of a selected list of schools of nursing. All of this she needs to meet the awakening interest of French citizens in the American system of graduate nursing.

### Its History Summarized

The history of the Organization may be briefly summarized somewhat as follows:

From 1912 to 1916 it was frankly propagandist and opportunist in character, aside from the publication of its magazine, then a quarterly. The major portion of its secretary's time was spent in travel, her work being composed largely of consultations and public speaking. Its standard making work grew steadily through its various avenues of interpretation, chiefly in stating minimum requirements for public health nursing as expressed in qualifications for appointments to local positions and for membership in the national body, and in advice and information regarding rules and regulations governing the organization, administration and practice of public health nursing. The growth of its influence was reflected in the constant increase in its membership and in the formation of state organizations.

New phases developed from 1916 to 1919. By 1916, the demand for public health nurses had far exceeded the supply of women qualified either by experience or special training, and the public had begun to grow intolerant of unprepared nurses. The problem was obviously to increase the supply. Hence the Organization turned its primary attention to the work of stimulating the development of post-graduate courses in public health nursing; and in encouraging the introduction of elementary instruction in public health nursing in qualified training schools for nurses through carefully arranged affiliations with visiting nurse associations. It also secured scholarship funds in several states and one reserved exclusively for women who wish to prepare themselves as teachers of public health nursing.

It recognized the desirability of stimulating appropri-

ate legislation in behalf of public health nursing, and prepared two bills suitable for adaptation to the needs of the various states. These looked toward the appropriation of public funds for public health nursing, and toward the creation of divisions or bureaus of public health nursing within state departments of health with qualified public health nurses as chiefs of said divisions or bureaus.

During this period the Organization increased its staff and its budget threefold and opened branch offices in Washington and Chicago, the former only for the period of the war. By the middle of 1919 it had become necessary to departmentalize its work and appoint secretaries in charge of each department. It also arranged to open two more branch offices in the far West and South but was later obliged to postpone these projects.

A new era opened in 1920. The Red Cross peace program had, by this time, precluded all need for further propaganda service, but had built up an unprecedented need for serious advisory and educational and research work. Hence the officers of the Organization resolved to confine their activities very largely to the field of "consulting engineers" or expert consultants.

Conspicuous among the plans for 1920 was that of stimulating the organization of state committees on public health nursing composed of representatives of all state agencies engaged in or actively supporting public health nursing. The purpose of such committees was to mobilize public opinion in favor of wise standards of public health nursing; and to support state departments of health and other state agencies in securing appropriations and legislation when necessary; and to recruit larger numbers of public health nurses and of students for schools of nursing. In short, the aim of these committees is to mobilize a great body of "Friends of Public Health Nursing," as those citizens have recently been called, who are interested to promote this form of public service.

### Indicates Research Activities

Public Health Nursing is still in the making. A great amount of serious study is needed before it can be adequately standardized. Eight years of constant application to the question have only served to prove its value and to point out its problems. It would be logical and is much to be desired that the National Organization for Public Health Nursing should now undertake many practical studies such as "Standardized units of work per nursing visit," "Standard forms for case records, statistical reports, financial statements," "Standard methods of organizing county units of work," "Minimum requirements of educational courses," and various statistical studies; and to prepare a handbook for speakers and many brief pamphlets on practical subjects. It is to be hoped that these urgently needed aids to local work and steps toward standardization may be promptly undertaken and that they may be done with the same scientific thoroughness that has characterized the recent study of public health nursing education conducted by the special committee under the direction of Miss Goldmark and Miss Anne Hervey Strong, and financed by the Rockefeller Foundation.

The Organization's history has been one of modest though creditable achievement. It has afforded a medium of exchange, a clearing house of information and interpretation; it has made public health nurses and public health nursing associations vocal. It should and, we believe, will press on to a future of larger service along these lines and help to mobilize and crystallize an intelligent public opinion, strong enough and appreciative enough to insure right standards and adequate appropria-

tions and to guarantee nursing care and oversight to all families at all time—and in fact to insure it as a state and national institution.

Professor C.-E. A. Winslow, chairman of the Advisory Committee of the National Organization for Public Health Nursing, and one of the best known sanitarians in this country, says:

"I consider that the National Organization has rendered and is rendering, and must continue to render, an abso-

lutely invaluable service in guiding and coordinating the development of the new profession of public health nursing. I know of no other social development comparable in magnitude with the growth of public health nursing, and your Organization—*our* Organization, I may say as a newly elected director—is the one agency which can furnish the inspiration and the counsel and the organizing and correlating power to keep the growth along sound and progressive lines."

## CAMP ROOSEVELT AS A BOY BUILDER

BY LILLIAN EWERTSEN, DEPARTMENT OF EDUCATION, CHICAGO, ILL.

THE problem of education as a whole embraces three collateral branches—intellectual, physical and moral training. Education has the thoroughly practical end in view of rendering a man fully capable and efficient in the performance of all practical duties. Physical education is not to be thought of as something separate and apart from this scheme as a whole. Mental training is important, but no more and no less so than adequate physical development, from which it cannot be divorced.

Welton has said, "the function of the mind is rationally to control our actions in the world around us, while the body is the instrument by which the mind is brought into relation with external things." In order, then, that the body may be the effectual instrument for which it is intended, it must be sound and it must be trained to respond promptly and skilfully, with senses and muscular response in harmony.

### Sound Physique, Sound Morals



Captain F. L. Beals, commandant of the camp, has made it his life study to achieve the maximum amount of help for the adolescent boy.

Before education can be effective, it must have a practical underlying purpose. In the case of education in its broader sense, this may be readily recognized. The practical application of this theory of education is more important than ever before—and the returns are readily recognizable.

While physical education has the same practical value, as a part of general education, its returns are not so readily appreciated by the uninformed. In order to give it force and make it effectual, it must have a deep and definite purpose.

Our future as a nation calls for stout hearts, clear heads, and vigorous manhood. Every young man entering upon life's tasks must possess these qualities if he is to succeed as an individual. If these qualities are cultivated in the individual, our country will be composed of stout hearts, clear heads, and the vigorous manhood which will insure a rational and vigorous race.

Every young American of today must be made ready for any undertaking which may require of him courage and endurance. The Chicago high schools, twenty-three in number, are exerting every effort to bring about these results through the Department of Physical Education

and its Junior Reserve Officers' Training Corps. Under Captain F. L. Beals of the United States Army, and his one hundred and fifty assistants, these two departments are laboring to develop better physical and moral types in these future American citizens. It is recognized that much of the good accomplished during the school year is lost during the long, idle summer vacation. Captain Beals has long felt that if these idle summer months could be put to some useful purpose, much good would redound to the individual and to the country at large. To be effective, a plan for accomplishing this would need to bring together a large number of boys from all walks of life for a common purpose; and, to secure the best results, would require them to be placed on terms of equality, both as to their daily modes of life and their clothing, in a place out in the open, under canvas, under a military and physical régime fitted to their needs. This plan was placed before leading business and professional men in Chicago, who endorsed it and agreed to furnish the necessary finances.

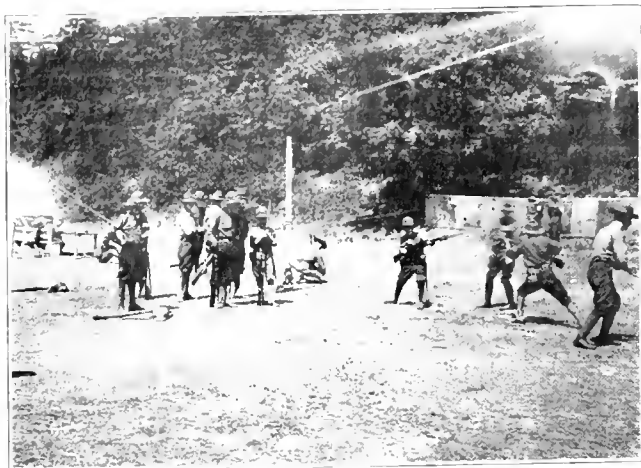
Thus grew the Camp Roosevelt Association, which founded Camp Roosevelt, the National Boys' Training Camp. The Board of Education of Chicago sponsored the camp, and the War Department of the United States Government supplied the necessary equipment and detailed specially selected officers and non-commissioned officers of the Army as instructors. For boys desiring to make up high school subjects, a summer high school was opened and selected teachers from the Chicago high schools were sent to camp.

### Training Through Play

Camp Roosevelt has been described as the finest boys'



Major General Leonard Wood, pinning a medal on a boy during his recent tour of inspection at Camp Roosevelt. The War Department, after two tours of inspection, has stamped the work with full approval. A good physique is an achievement, not a chance product.



All activities have a proper objective, providing the incentive of interest and competition along with recreation in order to develop necessary coordinations.

playground in the country. It is located five miles south of Muskegon, Mich., in a beautiful valley surrounded by wooded hills, bounded on one side by Lake Michigan and on another by Lake Mona. The camp is so located as to give a maximum of recreation and enjoyment. It is sufficiently near water so that swimming may be indulged in freely; at the same time it is sufficiently far removed to insure safety. Its broad plains are ideal for drills, maneuvers, and athletics. The wooded hills by which it is surrounded constitute the necessary setting for such an enterprise. The natural wonders of the site of the camp alone make it a haven of joy to the boy.

It is interesting to note that the War Department has adopted the Camp Roosevelt plan as a national policy, with the purpose of establishing three or four more camps similar to Camp Roosevelt, the action being taken after two tours of inspection by representatives of the War Department to determine the status of the work carried on.

The daily program at camp includes military instruction, physical exercises, basketball, baseball, swimming, target practice, and all of the outdoor sports indulged in by the American boy. Week-end hikes to nearby lakes are featured. The evening entertainment includes movies, stunt nights by the companies, lectures by well known business men, campfires and programs arranged by the Young Men's Christian Association and the Knights of



We are only beginning to realize that it is through play activities, freely indulged in before we are muscle bound, that adaptability and accuracy are rendered habitual. The incidental "fun" registers this hard work as a fully harmonious reaction.

Columbus workers of the camp. The Scoutcraft Division conforms to a separate schedule especially adapted to the younger boys, ranging in ages from twelve to fourteen.

The American Red Cross maintains a unit at the camp, comprising three physicians and a Red Cross nurse. They care for the sick patients, administer first aid, safeguard the sanitation of the camp, and at the same time give to all of the boys enrolled a thorough course in first aid. Each boy must pass a test before leaving camp and, when he has successfully completed his work, he receives a first aid certificate for the work accomplished.

Captain Beals, commandant of the camp, has dedicated his life to boy building. Captain Beals' stock in trade is boys. His life interest is boys, and his ultimate aim is to so mold the growing boy of today that he will develop into the very finest specimen of clean, wholesome American citizen. As an officer of the United States Army he grasped the greatness of the health building work that had been accomplished at the training camps throughout the country during the World War. He sought long for ways and means by which to inculcate it into his work, so that the maximum amount of good could be wrought for the adolescent boy. The culmination of many months of strenuous, concentrated thought and labor is this tremendous camp for boys from all parts of the country.

The camp is a splendid force in Americanization, and in building up a democratic spirit among the boys. This is a vital factor, one of prime importance in the business of boy building. Parents of growing boys, and all who are interested in boyhood, should interest themselves in this project, and support to the fullest extent the Camp Roosevelt plan.

### IMMUNITY TO YELLOW FEVER

A new factor in yellow fever control has been introduced through the possibility of making a person immune to yellow fever by vaccination. Heretofore, work in yellow fever control has been entirely confined to the prevention of infection by controlling breeding places of the mosquito which carries the yellow fever germ. The isolation of the yellow fever organism, however, and the discovery of Dr. Hideyo Noguchi, at the Rockefeller Institute for Research, has made possible the development of a serum and a vaccine which promises immunity against contracting the disease.

Already vaccination against yellow fever of people going to tropical countries is being made in New York. This work is being done at the Broad Street Hospital with vaccine furnished by the Rockefeller Institute.

The first shipment of vaccine for yellow fever from the Rockefeller Institute to tropical countries was made a year ago, when three hundred bottles were sent to Mexico. Other shipments have been made since then, the latest November 10. All vaccine supplied to Mexico is sent to the Mexican Department of Health, which arranges for its distribution. The Central American countries are so well convinced of the efficacy of Dr. Noguchi's vaccine that they are permitting travel without quarantine detention of those who have been successfully vaccinated.

### REPORT ON RUSSIAN REFUGEES

The American Red Cross at Paris has issued a report which constitutes the first estimate of the distribution of the Russian refugees who have invaded every country in Europe during the past two years. Their present number is estimated at one million persons outside of Poland, where there are probably another million.



# THE MONTH IN MEDICINE

## A Survey of Current Medical Literature

SOLOMON STROUSE, M.D., *Editor*

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### DIPHTHERIA BACILLUS CARRIERS

A VERY important study of the diphtheria bacillus carrier has been undertaken at the Johns Hopkins Hospital in the past few years. Some of the results have been previously reported, but recently Gelien, Moss, and Guthrie<sup>1</sup> have contributed two articles of great scientific importance. Their animal experiments on rabbits, guinea pigs, and cats on the effect of diphtheria antitoxin in preventing the lodgment and growth of the diphtheria bacillus in the nasal passages of these animals warrant certain conclusions, among which may be summarized: (1) The production of infection with the diphtheria bacillus was inconstant even when the organisms were introduced directly into the nose; (2) when infected, the duration was short; and (3) the occurrence of the infection was entirely unaffected by previous administration of antitoxin. Although one must hesitate always in drawing too sweeping conclusions from animal experiments, these certainly offer affirmative evidence of the well established clinical fact that antitoxin has no effect on the diphtheria carrier.

In a second communication the same authors devote their attention to a study of the diphtheria carrier. In their new study they extended the scope of the previous investigation. The information obtained is too detailed and too important to permit easy comment, but certain conclusions can be evaluated. For instance, 10 per cent of a certain group of school children in Baltimore in February, 1912, showed Bacillus diphtheria and the number of children who yielded positive cultures at one or other

examination was 18 per cent. There is no apparent direct relationship between pathological throat conditions and the incidence of the bacilli. Eleven per cent of the cultures were found to be virulent. Temperature elevations in the individual child had no direct bearing on the culture.

It was also shown that Bacillus diphtheria found in the throats in various school children varied from time to time, being present at one examination and absent at another. It was also found that at one examination the cultures might be virulent and at another avirulent.

From the standards of public health the relation of the bacillus carriers to the community is of the greatest importance and this point was carefully investigated by the authors practically with negative results; that is, the carriers were not exposed to clinical diphtheria and no clinical diphtheria followed in the wake of the carrier. The question might be raised as to whether the authors were dealing with true Bacillus diphtheria. This point is thoroughly discussed in the body of the article. On the whole, as a summary, it seems to us that this article should be studied by every one interested in hospitals, public health, or a general community health.

### VACCINATION WITH TUBERCLE BACILLI

CALMETTE and Guérin<sup>1</sup> published the results of their investigation before they had originally intended. Their work, which had reached a considerable degree of development, was interrupted by the war, and they have been unable to resume it.

They have been able to obtain a strain of attenuated

1. Gelien, J., Moss, W. L., and Guthrie, C. G.: The Effect of Diphtheria Antitoxin in Preventing Lodgment and Growth of the Diphtheria Bacillus in the Nasal Passages of Animals. *Bull. Johns Hopkins Hosp.*, 1920, xxxi, No. 3571, November.

2. *Ibid.*, Diphtheria Bacillus Carriers, p. 388.

1. Calmette, A., and Guérin, C.: Nouvelles Recherches Experimentales sur la Vaccination des Bovides Contre la Tuberculose, *Annals de l'Institut Pasteur*, 1920, xxxiv, p. 55.

bovine tubercle bacilli by cultivating this organism over a period of twelve and one-half years on medicine containing bile and glycerin. It is evidently the bile which has produced this attenuation of the organism. They believe that this attenuation has become a permanent characteristic of this strain of bovine tubercle bacilli. They have proved it to be avirulent for cattle, monkeys, and guinea pigs, and make the statement that an intravenous injection of 44,000 of these tubercle bacilli proved non-pathogenic for man.

These investigators demonstrated in the laboratory that the injection of large intravenous doses into animals caused the animals to develop resistance against subsequent lethal doses of virulent tubercle bacilli. They decided that the supreme test of the value of a vaccine of these avirulent tubercle bacilli would be the ability to protect cattle from infection when these animals were continuously exposed to infection by contact with other tuberculous cattle. The material published consists of a single series of experiments of this type. Ten calves were kept in a specially constructed stable for two and one-half years with a number of cows which were proved to be tuberculous. Four of these calves served as controls. The other six were vaccinated intravenously with large doses of living avirulent tubercle bacilli. Three were injected with a single dose of 880,000 tubercle bacilli—one with two doses, and two with three doses. Three out of the four controls reacted to tuberculin before they were killed, and showed tuberculous lesions at autopsy. The fourth one was adjudged by the investigators to be naturally immune. One of the three which received only one dose of vaccine showed no tuberculin reaction and no tuberculosis at autopsy. The calf that received two doses of vaccine showed no reaction to tuberculin and no tuberculosis. Both the calves which received three injections of vaccine showed no reaction to tuberculin and no tuberculosis. The authors conclude that they have demonstrated the protective action of intravenous injection with the living avirulent tubercle bacilli used by them. They believe that single doses cause resistance to the infection of tuberculosis for a period of only about eighteen months. They believe that longer periods of immunity, possibly permanent immunity, can be developed in animals by several intravenous inoculations, or what might possibly be better still, by inoculation once a year.

This work must be considered as of supreme importance, as it confirms the conclusions arrived at from all recent investigations as to the manner in which immunity to tuberculosis may be developed. None of the various types of tuberculin or products of tubercle bacilli have experimentally conferred immunity on animals. Therapy with these various non-living products of tubercle bacilli also yielded no results. Investigators in the field of tuberculosis have long realized that the only chance of combating tuberculosis lay in the development of a living strain of tubercle bacilli which would stimulate resistance, and yet not infect or be dangerous to the patient or animal.

So many false hopes have been raised by many previous investigations of tuberculosis that one is naturally guarded in accepting work which now appears. This investigation of Calmette and Guérin,\* however, is an extremely careful, painstaking research and carries with it very conservative claims by these two workers. The authority of Calmette adds great weight to this research,

which should, therefore, be received with an open mind as well as with a great desire for further facts and for a trial of the original experiments in a large series of animals. It gives one renewed hope that, in spite of the previous disasters, possibly something to alleviate or prevent tuberculosis in man has been discovered. W. T.

## DEFORMITY FOLLOWING BURNS

HARRIGAN and Boorstein<sup>1</sup> call attention to the need of immediate treatment to prevent deformity following burns. This, as they remark, is something all physicians know but are too prone to forget. With the very first dressing steps are taken to keep the limbs, neck, jaws, or other members in such positions that when healing has occurred the resulting scar tissue will not have caused anatomical deformity. For example, in extensive burns of the neck, after having applied to the burn the paraffin, picric acid, or whatever dressing may be used, instead of covering with the usual bandage, the authors apply a high felt collar which holds the head erect, with the chin tilted upwards. This collar is closed with clips or is sewed on, is as easily removed at subsequent dressings as would be a bandage, and keeps the head and neck in good position. Should a tendency develop in spite of this to pull the head to one side or the other, counter pressure is made by heightening or padding the collar on the wounded side. Burns of the anterior surface at the elbow are treated with the forearm extended from the time of the first dressing. In similar way are burns of other parts of the body cared for, the part held in normal position or in that position which the occurrence of a strong cicatrix might prevent. The authors, quite naturally, have found that by conscientiously carrying out this line of treatment, the results obtained are far above the average, in fact they say, "... we have noted, to our great satisfaction, that no contractures have developed."

R. B. B.

## DR. OTTO L. SCHMIDT HONORED

ON DECEMBER 21, 1920, a number of physicians, clergymen, jurists, and other prominent citizens of Illinois gathered to express their appreciation of Dr. Otto L. Schmidt of Chicago, this formal expression of appreciation being occasioned by the completion of the work of the Illinois Centennial Committee, the purpose of which was to collect historical material pertaining to the state of Illinois. Dr. Schmidt was commended as a physician, as an historian, and as a citizen.

Very seldom does such a signal honor come to a man during his lifetime, but Dr. Schmidt merits it in full measure. He is one of the most prominent physicians of Chicago; he has always practiced scientific medicine. He was one of the few in this country who made use of x-ray immediately after its introduction, and he has always combined clinical and laboratory methods. He is generally known in Chicago as the "poor man's doctor," following in this respect the example set by his father, Ernest Schmidt, a prominent physician and philosopher of the last century.

In addition to his medical work, Dr. Schmidt has been interested in the study of history, particularly in the history of Illinois. He has gathered in a scientific manner many hitherto unavailable data which were scattered in books and in journals, thus making possible a consecutive and reliable history of the state of Illinois.

<sup>1</sup> 1. Harrigan, Anthony H., and Boorstein, Samuel W.: *Orthopedic Treatment of Burns*, Ann. Surg., 1920, Lxxii, No. 5.

\*Since this editorial was written reports in the daily press indicate that an extensive experiment will be performed with this vaccine of avirulent, living tubercle bacilli. It is stated that the French Government has put a small island off the coast of Africa at the disposal of these investigators. Funds are being raised and monkeys and the higher apes will be secured for the investigation. The result of this research will be awaited with great interest.



## CHOLECYSTITIS, CHOLELITHIASIS AND PANCREATITIS

FOR a number of years cholecystectomy rather than cholecystostomy has been the surgical procedure of choice in diseases of the gall bladder. The greater frequency of this operation has given increased opportunity to study the pathology of the gall bladder, especially the pathology of early lesions.

McCarty<sup>1</sup> has recently set down a description of early changes in gall bladders removed for stones, in which the mucosa appeared normal to the naked eye, but, microscopically, showed very evident lesions, appearing as congestion and edema of the villi, transforming their normal thin, tentacular appearance to bulbous, sometimes cystic swellings. Often there is slight lymphocytic infiltration of the villi. Coincidentally there is a round cell infiltration in the submucosa and the mucosa muscularis, this condition being followed by fibrosis: *i. e.*, these gall bladders show the evidences of mild chronic inflammation.

### Proof of Infectious Origin

Strawberry gall bladder was first described by Moynihan<sup>2</sup> as "a disease of the gall bladder requiring cholecystectomy," and characterized by thick, tenacious, tarry bile, with the mucosa "dusted with fine stones fitting snugly into pits in the mucous membrane."

This condition is encountered more frequently since cholecystectomy is the operation of choice, being exhibited in 7.5 per cent of cases in 1912<sup>3</sup> and in 19 per cent in 1917. The yellowish plaques are not stones, but lipoids beneath the epithelial surface. In the above group of very early lesions there is often observed microscopically a deposit of fine, lipoid granules in the mucosa and submucosa. Generally there are fine dots—identified by using stains for fats—in or just beneath the lining cell layer of the mucosa, but sometimes there are large spheroidal cells filled with lipoid masses deeper down in the mucosa and in the submucosa.

These changes should relegate as passé the old dictum that gall stones are frequently found in normal gall bladders, and the uniformity with which mild chronic infection can be demonstrated has an important bearing on Rosenow's well known ideas regarding infection as the agent responsible for gall stones. Rosenow<sup>4</sup> cultured streptococci, and occasionally a colon bacillus, from sterily macerated gall bladders. These organisms, when injected intravenously into rabbits, produced cholecystitis, frequently with the formation of stones. The stones so produced always had a bacterial nucleus. In one case stones were found ten days after injection, and in their centers were virulent Streptococci. The Streptococcus was the chief trouble maker, for the colon cultures did not give nearly so uniform results, and one case of cholelithiasis following typhoid was found to be due to the Streptococcus. Intravenous injection of the cultures alone would reproduce the disease; injection into the portal system or directly into the gall bladder gave no results. This would indicate that cholecystitis is a blood borne infection; hence the significance of lymphocytic infiltration and fibrosis in the submucosa of gall bladders containing stones, but not suspected macroscopically as being abnormal. According to Rosenow's work, there has been enough inflammation to initiate the precipitation of stones.

Infection, however, may be considered as only part of

the story of gall stone formation. Four pure cholesterol stones in Rosenow's series contained no bacteria. Recently Rothschild, Wilensky,<sup>5</sup> and Rosenthal<sup>6</sup> have studied the metabolism of cholesterol, to determine the rôle which states of cholesterol supersaturation play upon its precipitation as gall stones.

### The Cholesterol Content

The content of cholesterol in the blood varies directly with the diet. Herbivora, whose diet is poor in lipoids, have a low blood cholesterol index, and a hypercholesterinemia can be produced in these animals by feeding lipoids or a fat rich diet. In direct relation with the amount of cholesterol in the blood is the amount present in the bile. According to Rothschild, cholesterol supersaturation in the blood will be followed by supersaturation in the bile, and under certain conditions by precipitation as stones in the gall bladder. The commonest occurrence, clinically, of hypercholesterinemia is in pregnancy and during the puerperium. The frequency of initial gall stone attacks in the later months of pregnancy or shortly thereafter is elementary clinical knowledge. Natives of China, Java, India, whose diet resembles that of herbivora, and who have low blood cholesterol, have a low incidence of cholelithiasis. Gall stones are most frequent among the people of the western world, whose diet is most omnivorous, and they are four times as frequent in women as in men, this latter fact due solely to the hypercholesterinemia of pregnancy. In men "infection dominates the field; cholecystitis without stones is found more often, and stone formation is secondary." The finding of gall stones *post mortem*, with no history of symptoms, is explained by Rothschild as being the precipitation from a period of hypercholesterinemia, perhaps without the recurrence of this condition and without the lodgment of a calculus in the cystic duct or the production of inflammation.

However, granted that stones do form without inflammation and, also, that inflammation undoubtedly will induce gall stone formation, the enigma still remains as to which is the preponderant factor in the majority of cases of cholelithiasis. One explanation would be much more rational than two separate and distinct ones. The ultimate solution may be that the mechanism by which cholesterol is held in solution in the gall bladder is very sensitive. It is known that increase of bile salts may enable the bile to hold in solution an extraordinary amount of cholesterol, and that inflammation of the gall bladder precipitates the mucin and allows for a greater concentration of the bile salts.<sup>7</sup> Perhaps mild degrees of bacterial inflammation may alter the physical characteristics of the bile sufficiently to cause precipitation of the cholesterol. This takes place more easily when the blood, and consequently the bile, is in a state of cholesterol supersaturation.

In this connection Meltzer<sup>8</sup> has emphasized the fact that the physiological stagnation of the bile in the gall bladder of itself predisposes to calculi formation.

### Gall Stones With Pancreatitis

When Opie<sup>9</sup> showed in 1901 that injection of bile into the pancreatic duct would cause pancreatic necrosis, and later demonstrated at an autopsy at Johns Hopkins that a small stone impacted in the papilla of Vater could set

5. Rothschild: Proc. New York Path. Soc., 1914, xiv, No. 8 and No. 6.
6. Rothschild and Wilensky: Am. Jour. Med. Sc., 1918, clvi, 239-401, 564.
7. Rothschild and Rosenthal: Am. Jour. Med. Sc., 1916, cliv, 394.
8. Archibald: Surg., Gynec. & Obst., 1919, xxviii, 529.
9. Meltzer: Am. Jour. Med. Sc., 1917, cliv, 169.
10. Opie: Jour. Exp. Med., May, 1910.

1. McCart: Am. Jour. Med. Sc., 1920, cliv, 616.
2. Moynihan: Ann. Surg., 1909, i, 1265.
3. McCart: Ann. Surg., 1909, lxix, 131.
4. Rosenow: Jour. Infec. Dis., 1916, xix, 528.

up a fatal pancreatitis, he furnished an apparently satisfactory explanation of what was then a very obscure condition. Subsequent clinical reports confirmed the association of gall stone disease with pancreatitis, but there has always been the stumbling block that frequent cases of pancreatitis show no stone in the ampulla, and it has become increasingly evident that although there is usually some associated inflammation of the gall tracts, pancreatitis does occur without gall stones, a condition reported in 45 per cent of Deaver's<sup>11</sup> cases. Also, an occasional case of pancreatitis is met with following peptic ulcer. These facts have led to the assumption that in the absence of a stone in the ampulla, a plug of infected mucus had dammed back the bile, and have led Deaver to assert that pancreatitis is a retrograde infection through the lymph channels, the enlarged lymph nodes at the head of the pancreas seemingly supporting this.

Archibald<sup>12</sup> has recently offered another and very logical explanation. As a rule, in the lymphatic system, infection travels with the course of the lymph stream, and not in the opposite direction against the current, the so-called retrograde infection. Thus, infection travels up the arm to the axillary glands, or from the breast to the axilla, but not *vice versa*, from the axilla to the arm or breast. Carcinoma cells may mechanically grow in a retrograde fashion along the lymphatics, but, for the average inflammation, the lymph glands draining an organ act as a barrier against the spread of infection toward that organ. The glands at the head of the pancreas drain the pancreas; the normal lymph stream through them is from that organ. Consequently, their enlargement should denote a lesion which is primary in the pancreas rather than their being the means of bringing infection to the pancreas. Also, the diseases of the pancreas are hemorrhagic necrosis, cyst formation, induration, etc.—abscesses or other evidence of infection being relatively uncommon. It follows that an infected plug of mucus in the ampulla is not the mechanism which dams back the bile.

Oddi's sphincter is a bit of smooth muscle surrounding the common duct just beneath the duodenal mucosa. It is capable of resisting 600-700 mm. water, two or three times the normal secretory pressure of the bile in the liver—which is 230 mm. It was accurately described by the Italian physiologist Oddi in 1887; but, although somewhat known to physiologists, it had never been given any clinical importance; in fact, when Archibald<sup>13</sup> first postulated it as the mechanism concerned in the production of pancreatitis, he was unaware of Oddi's work. This sphincter can be put into spasm by mechanical irritation of the duodenal mucosa, by the application of dilute HCl to the stomach or duodenum, or by stimulating the vagus. Archibald thought that the physiological contraction of this sphincter was enough to cause bile to run into the pancreas. By running bile into the gall bladder under pressure greater than the normal biliary secretory pressure, but not great enough to force the sphincter and let it run into the duodenum, he produced an acute hemorrhagic pancreatitis in his first cat, fulminating enough to kill it in twenty minutes. By regulating the pressure and the amount, varying degrees of pancreatitis could be produced, from the above fatal type to benign hyaline scars. Infected bile produced pancreatitis more readily than non-infected, and bile salts were much more destructive to the pancreas than bile. The bacteria prob-

ably acted mechanically by precipitating the mucin of the bile, as older experiments showed that bile deprived of its mucin caused pancreatitis more readily.<sup>14</sup> The pancreatic necrosis is a true tissue death, without the aids of autolytic ferments, trypsinogen, enterokinase, or inflammatory exudates—all of which have been held responsible for pancreatic necrosis.

In ordinary life, bile must enter the pancreas fairly frequently. If only in a small quantity, it leads to a bit of hyaline degeneration; such plaques are frequently found at autopsy without any assignable explanation. Clinically, the attack which produced this localized necrosis may have been some vague undiagnosed upper abdominal distress, coming on perhaps two or three hours after a full meal. At this time the secretory pressure of the bile is at its height, and acidity may be forcibly contracting the sphincter. Hyperacidity, reflexly contracting the sphincter, predisposes to pancreatitis; in fact, many cases of pancreatitis have a history of hyperacidity.

If the destruction is greater than the above localized plaques, the indurated, enlarged, firm pancreas, which gets well by drainage, is produced; and, if the necrosis is fulminating, cyst, hemorrhage, abscess, or acute death ensues.

Post-operative drainage through the common or cystic duct should be prolonged—as much as three months for the average moderately severe case. Some recent views,<sup>15</sup> never very popular, that drainage should be through the anterior abdomen, with multiple incisions into the pancreas to anticipate inflammation, have, of course, no *raison d'être*, excepting this work. Cholecystectomy and drainage of the common duct is better than cholecystostomy. The reason is that after cholecystectomy the extrahepatic ducts dilate.<sup>16</sup> The biliary secretory pressure, instead of forcing bile into the gall bladder, dams it back behind the sphincter. Gradually the sphincter loses its tonus, until it can withstand only a small fraction of the biliary pressure, and then bile drains into the duodenum without hindrance. That cholecystectomy of itself cured pancreatitis, by in some way producing drainage, was a clinical observation before this mechanism was known.

HARRY SALTZSTEIN.

## LIFE OF TRANSFUSED BLOOD CORPUSCLES

WHAT happens when we transfuse whole blood from a healthy individual into a sick or wounded person? Does the new blood act simply as a medium which dilutes the remaining blood and distends the arterial system, or does it take up the actual function of the blood and act as an oxygen carrier, and so forth?

If the former action takes place, then normal saline for a short time, and gum arabic solution for a longer time, ought to have all the advantages of a transfusion. The procedure is much simpler, no donors are required and the transfusion mixture can easily be accessible. If, however, the addition of whole blood has advantages other than simple mechanical ones, if the transfused blood, in adding a certain numbers of antibodies, also adds elements which contribute to the general metabolic process, then the question naturally arises, for how long a period will these elements function?

This question is answered in part by Ashby.<sup>1</sup> Working at the Mayo clinic, this author in a series of interesting experiments arrived at certain conclusions regarding the

11. Deaver: Internat. Clin., 1914, iii, No. 24, 208.

12. Archibald: Canad. Med. Assn. Jour., 1911.

13. Flexner: Jour. Exper. Med., 1906, viii, 167.

14. Mayo: Surg., Gynec. & Obst., 1919, xxviii, 28.

15. Judd and Mann: Surg., Gynec. & Obst., 1917, xxiv, 137.

1. Ashby, Winifred: Some Data on the Range of Life of Transfused Blood Corpuscles in Persons with Idiopathic Blood Diseases, Med. Clinics of North America, 1919, iii, No. 3.

life of the transfused red blood cell. It was shown that from 60 to 80 per cent of the transfused red blood cells remained in the circulation of the recipient for an average of thirty-one days; 40 to 50 per cent remained for an average of more than thirty-seven days.

These figures were arrived at in the following manner. It had been shown, in previous work by the same author, that mixed red cells of different groups could be separated *in vitro* almost quantitatively from one another, by means of serum which would agglutinate one set of corpuscles and leave the other free. When sera are used which are but slightly diluted, the agglutination of the red cells of the groups for which the sera contain agglutinins is almost complete. If, now, a given amount of Group IV blood—which serum agglutinates the red cells of all other groups, but naturally does not agglutinate the cells of its own group—is added, it will be found that the number of unagglutinated red cells increases in proportion to the amount of Group IV blood added.

The same holds true *in vivo*. Given a person in Group I, II, or III, it will be found that, when tested with Group IV serum, agglutination will be practically complete. If the same person be transfused with Group IV blood and, following this, another agglutination test be made, the number of unagglutinated red cells will have increased markedly. Various authors have evolved methods for determining the total blood volume, and by using these figures it is found that the number of unagglutinated red cells will vary rather accurately with the amount of dilution which has occurred. Ashby made the study with a group of patients suffering from anemia without idiopathic blood disease.

The decision as to whether saline solution, gum arabic solution or other synthetic fluids, or whole blood be used for transfusion, ought to be easier to make, knowing that in all probability more than 50 per cent of the transfused blood cells will remain in the circulation of the recipient for a longer period than thirty days. It would, however, be interesting if in some way it could be shown that these red cells not only remain in the blood stream but are alive and functioning.

R. B. B.

## HISTORY AND BIBLIOGRAPHY OF ANATOMIC ILLUSTRATION\*

It is the irony of fate that an author should die before the publication of his masterpiece. This is what happened to Dr. Mortimer Frank—gentleman, physician, scholar, ophthalmologist, and medical historian. At the time of his death Dr. Frank apparently was in the full tide of his physical and mental powers. He was called suddenly, at the early age of forty-four years. Only the initiated, those who have followed the bypaths of medical history, such as the one explored by Dr. Frank, can appreciate our loss.

This book purports to be a translation of Choulant's "Geschichte und Bibliographie der anatomischen Abbildung nach ihrer Beziehung auf anatomische Wissenschaft und bildende Kunst," published at Leipzig in 1852. The work, however, is much more than a translation, for the original text of Choulant has grown, by the translator's notes and additions, from 203 to 435 pages.

The additions made by the translator are of great value. Since Choulant published his original work vast stores

of facts have been supplied by the researches of such writers as Baas, Pagel, Neuberger, von Töply, Holländer, Sudhoff, Garrison, Osler, and others. The notes which Choulant doubtless intended for use in a second edition have been incorporated in the volume and a life of Choulant has been supplied by the translator. A scholarly chapter on "Sculpture and Painting as Modes of Anatomical Illustration" has been written by Fielding H. Garrison and Edward C. Streeter. The work closes with an account of "Anatomical Illustration Since the Time of Choulant," from Garrison's fertile pen. Space allotted to this review does not permit a detailed account of the



JOHANN LUDWIG CHOULANT

"The history of a science is the palladium of its freedom; it prevents it from being tyrannized over by narrow, bigoted viewpoints."

contents of this work. It is not too much to say that its publication marks a milestone in the study of medical history among English-reading peoples.

A word as to the merits of the translation. Those of us who have waded through what Garrison calls "the prosy, sesquipedalian, sometimes obscure sentences of the original," will welcome this book. Dr. Frank has taken the long and involved sentences of Choulant, chopped them into smaller segments, clarified their meaning, and presented their truths to us with the verve and dash of a vivid and charming style.

Just as Vesalius said of his artist, Jan Stephan van Calcar, that he deserved to rank "with the divine and happy wits of Italy"; so may the reviewer be permitted to express a similar sentiment regarding the translator and elaborator of Choulant's classic.

JAMES MOORES BALL, M.D.

\*Choulant, Ludwig: History and Bibliography of Anatomic Illustration and Its Relation to Anatomic Science and the Graphic Arts. Translated and edited with notes and biography by Mortimer Frank, B.S., M.D., with biographical sketch of the translator and two additional sections by Fielding H. Garrison and Edward C. Streeter. University of Chicago Press, Chicago, 1920.

# PROGRESS IN PEDIATRICS—COLLECTIVE ABSTRACT\*

DURING the war pediatric literature was almost at a standstill. Many of the pediatricians of this country and abroad left private and hospital practice to enter military service. Only the most pressing problems occupied the minds of those who remained at home, and the results of such researches as were made were not written. As to the work done abroad, especially in Germany and Austria, until very recently no report of it reached us. Now, however, with the end of the war, pediatricians are resuming activities, with the result that pediatric literature is returning to normal. Of the work done in Austria under the stress and strain of privation due to the food shortage, the work of von Pirquet<sup>1</sup> and his associates stands out pre-eminently. From them we have the latest word in infant feeding, although prediction cannot be made as to what success will be attained by other workers in the field with the new system of feeding Pirquet and his associates have inaugurated.

## The New Nutritional Unit

In his new system of feeding, Pirquet substitutes the term *Nem* for the commonly used term, *calories*. Pirquet believes that the conception of calories is too vague and is not understood by the average physician. *Nem*, on the other hand, is a unit which is equivalent to 1 gram of mother's milk, consisting of 1.7 protein, 3.7 per cent fat, and 6.7 per cent sugar. All other foods are compared on the basis of 1 gram of mother's milk or *Nem* (*Nutritionis Elementum*).

Even more important than the new term, *Nem*, is the system developed by von Pirquet to figure out the individual food requirement of a child. Prior to this investigation the work of Heubner and Rubner had been the only basis of calculation of a child's food requirement. These workers determined by metabolic experiments that the food requirement of a child under six months is 100 calories per kilo bodyweight. Pirquet, on the other hand, believed that the determination of the fuel needs of child in a metabolism box cannot serve as a basis for the active child, and therefore looked for another standard, which he believes he found in the intestinal area. In order to figure out the daily requirements of food, Pirquet states that it is necessary to keep in mind the fact that there are minimum, optimum, and maximum food requirements.

The minimum requirement is the amount of food necessary to replace the wear and tear of the inner workings of the body, such as the work of the heart, of the respiratory apparatus, and the glands. The maximum requirement is the largest amount of food the stomach and bowels can take care of; in other words, the limit of tolerance. The optimum requirement is the amount of food necessary for a well functioning body to maintain health and to thrive.

For the maximum amount, 1 *Nem* is necessary for every cm<sup>2</sup> of intestinal surface, the intestinal surface being found by measuring the sitting height of the individual. For instance, the maximum of food in twenty-

four hours for an infant of 40 cm. sitting height is equal to 40<sup>2</sup>, or 1,600 *Nem*. In a breast fed infant it equals 1,600 grams of mother's milk. In an older child the food is not milk, but the total amount is the equivalent of 1,600 grams of milk.

The minimum daily food is usually three-tenths of the maximum amount; hence an infant measuring 40 cm. sitting height requires 1,600x0.3 *Nem* as its minimum, or 480 *Nem*, that is, 480 grams of mother's milk. A given amount of food must be allowed for growth, one decinem being considered sufficient for that. One decinem is also allowed for fat deposit, so that we have in infants 3 decinem *siqua* for the minimum, 1 decinem for growth, and 1 or 2 decinem for fat, making a total of 5 or 6 decinem.

In the second half year, 1 decinem is added for muscular movements, making a total of 6 to 7 decinem. Assuming that the child at this age has a sitting height of 40 cm., it is to get 1,600x0.7 *Nem*, or 1,120 *Nem*. This can be given in the form of milk and cereals; for instance, the child may be given 5x160 grams, or 800 grams, of half milk with 68 grams of sugar. In addition to this, 160 grams of farina gruel can be given 2 times, which equals 320 *Nem*. This will make the total for the day 1,120 *Nem*.

## Work Reported on Vitamines

Next in importance to Pirquet's system of feeding is the work done on vitamines. Daniels, Byfield, and Loughlin<sup>2</sup> report extensive work on antineuritic vitamine. They find that the addition of the antineuritic vitamine obtained from wheat embryo to the diet of babies furnishes an adequate number of calories to stimulate growth. The beneficial influence of adding a specially prepared vegetable soup in sufficient quantity as part diluent in the milk modifications for infants is apparently due to the presence of the antineuritis vitamine which it contains. Both the alcoholic soluble material of the dried soup vegetables and the water extract (soup) stimulated growth in the authors' experiments.

The fact that the artificially fed infant requires a larger amount of food than the breast fed infant appears to be due to the relative paucity of diluted cow's milk in the antineuritic vitamine. It is probable that failure to gain in infants and young children is often the result of an insufficient amount of the antineuritic vitamine in the food. The diets of the young, according to the authors, should be more carefully scrutinized with this in mind.

Hess and Unger have reached the conclusion that the danger to infants of a diet deficient in fat-soluble vitamine is slight, provided it includes sufficient calories, and otherwise is complete. Infants can maintain their health and vigor despite amounts of fat-soluble vitamine so small as rarely to be encountered. In spite, therefore, of the fact that this vitamine is not widely distributed in nature, a disorder that may be termed "fat-soluble deficiency"—marasmus or xerophthalmia—is hardly to be apprehended from a clinical standpoint.

## Revive Chemical Analysis

A new turn in infant feeding is the revival of chemical analysis of breast milk. Years ago physicians were in

\*A two-part review, the first dealing with the problems of infant feeding, and the second, which will appear in the February issue of MODERN MEDICINE, dealing with the general phases of pediatrics.

<sup>1</sup> Von Pirquet: System der Ernährung, Berlin, Julius Springer, 1917.

<sup>2</sup> Shick: Das v. Pirquetsche System der Ernährung, Ergebn. d. Inn. Med. u. Kinderh., 1919, xvi.

<sup>3</sup> Fisher, H. K.: Von Pirquet's Feeding System, Am. J. Dis. Child., 1920, xix, p. 478.

Lackner: Von Pirquet Feeding System, Ill. M. J., September, 1920.

<sup>2</sup> Daniels, A. L., Byfield, A. H., and Loughlin, R.: The Role of the Antineuritic Vitamine in the Artificial Feeding of Infants, Am. J. Dis. Child., 1919, xviii, December.

<sup>3</sup> Hess, A. E., and Unger, L. J.: Clinical Role of Fat-Soluble Vitamine: Its Relation to Rickets, J. A. M. A., 1920, lxxiv, January 24.

the habit of testing mother's milk for the fat content in order to see whether the milk was too poor or too rich in fat. Of late the trend of opinion has been that all mother's milk is the same, that there is no such thing as bad breast milk, and that, therefore, the chemical examination of the milk is useless. It is therefore interesting to note the work done by Slawik.<sup>4</sup> He believes that abnormally high fat content of human milk is worthy of special observation as a cause in the nutritional disturbance of the nursling. To diagnose nutritional disturbance as such, because of an abnormal chemically composed milk, a lengthy and thorough examination of mother and infant is necessary, so that all other possible causes may be excluded. In any case, he says, one should never neglect to examine the mother's milk and its fat content in all chronic gastro-intestinal disturbances of nurslings with uncertain etiology.

### Bacteria in Nutritional Disturbance

It is also interesting to note the return of some pediatricians to bacteriology as a basis for nutritional disturbance. As is well known, pediatricians have given up the theories of Escherich and his school regarding the rôle of the intestinal flora in diarrhea of infancy. The work of Porter, Morris and Meyer<sup>5</sup> is reviving the Escherich idea, these authors having found that children whose diet is well balanced and whose nutrition is normal have an intestinal flora consisting of fermentative and putrefactive types without preponderance of either. Children fed on large quantities of cow's milk have a more complex flora made up of various types, most of which are facultative putrefactors.

In children who suffer from certain of the types of alimentary intoxication with malnutrition, the intestinal flora depart in a uniform manner from the normal, this departure always being characterized by the establishment of bacteria, predominantly fermentative types, and a later swing to balance between the two types. Such changes in the intestinal flora can be brought about in the intestine of the human infant by withdrawing animal protein and persistently feeding large amounts (from two to four ounces daily) of lactose and other carbohydrates, the period necessary to produce this variation ranging from ten to forty days. While feeding acidophilus cultures has in a few cases aided a more rapid establishment of aciduric flora in the baby's intestine, this influence was not very great. The progressive cessation of the symptoms of intoxication and a return of toxemic patients to nutritional health coincides with the recognizable dominance of a fermentative flora. Lactose and dextrines are the carbohydrates most effective in encouraging the rapid establishment of a fermentative flora in the intestines of infants and children.

### Feeding Atrophic Infants

Great interest was aroused by the work of Marriott,<sup>6</sup> who used lactic acid milk in the feeding of atrophic infants. The author has fed undiluted lactic-acid milk containing amounts of fat up to the proportion contained

in whole milk, and has been convinced that the great majority of weak, athreptic infants tolerate extremely well undiluted whole lactic-acid milk in fairly large amounts—one-fifth of the body weight or more daily. Infants under two months of age he usually fed the lactic-acid milk somewhat diluted, but the evidence is not conclusive that such dilution is essential.

He also added carbohydrate in the form of commercial corn syrup to the whole lactic-acid milk fed to athreptic infants, and the results were good. There was little or no tendency to diarrhea, even when as much as 10 per cent of carbohydrate was added. The stools remained firm, formed, and pasty, averaging from one to three a day. In the case of some infants there seemed to be almost no limit to the amount of carbohydrate that could be added to such a milk mixture.

In spite of the newer work, there are some pediatricians who claim to have attained success with the older methods of treatment, namely, withdrawal of food, purgation, and a gradual return to milk. Griffith<sup>7</sup> believes that the most vital step in the treatment of summer diarrhea is the complete removal of food at the beginning of the attack. In addition to the removal of food, he advises the administration of a purgative, such as castor oil for young infants, and magnesia for young children. This advice is contrary to the opinion of many pediatricians, who claim that purgation is not only unnecessary but at times even harmful.

### Success in Older Methods

A rather unique way of determining the digestion of certain food substances was adopted by Grulee<sup>8</sup> in his use of the precipitin method—originally formulated by Hektoen—for the determination of the amount of digestion of egg albumin in infants. From a study by the precipitin methods of the stool of infants and children, he came to the conclusion that egg albumin is in nearly every instance completely broken down by the digestive processes in infants and children, and he believes that this holds good even for the newborn.

The alkaline reaction of food is claimed by Hess and Unger<sup>9</sup> to be responsible for the development of scurvy. These authors believe that too little regard is paid to the deleterious effect of the alkalization of food for infants. If this is so, the addition of certain alkalis to many of the proprietary foods would prove harmful. Further investigation will demonstrate the value of this observation.

Orange juice as a laxative was thought to be too well established a fact to be disputed. Mothers and physicians alike have long had recourse to orange juice to combat the constipation of infants. It is, therefore, surprising to note the experience of Gerstenberger and Champion,<sup>10</sup> who found in orange juice a constipating effect. They compared the action of orange juice with a 10 per cent sugar solution and found the latter to have a much greater laxative effect than the former. The authors conclude, therefore, that orange juice should be used only as an antiscorbutic or as a diuretic, but not as a laxative. It is possible, of course, that the infant on whom these authors experimented was the exception rather than the rule. One must keep in mind the fact that no two children react exactly alike to any article of food.

(To be continued.)

4. Slawik, E.: Nutritional Disturbance with Fat-Rich Breast Milk. *Deutsche med. Wchnschr.*, 1919, xlv, January 30.  
5. Porter, Morris, and Meyer: Nutritional Disorders of Children Associated with a Putrefactive Intestinal Flora, 1919, xviii, *A. J. D. Child.*  
6. Marriott, W. McK.: Artificial Feeding of Athreptic Infants. *J. A. M. A.*, lxxiii, October 15.  
7. Griffith, J. P. C.: Dietetic Treatment of Summer Diarrhea. *Arch. Pediat.*, 1920, xxxvii, August.  
8. Grulee, C. G.: Precipitins for Egg Albumin in Stools. *A. J. D. Child.*, 1920, xx, July.  
9. Hess, A. F., and Unger, L. J.: Deleterious Effect of the Alkalization of Infant's Food, 1919, *J. A. M. A.*, November 1.  
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Community hygiene, properly incorporated in the school activities and school program, and properly and wisely administered and methodized, is a form of preparation for construction citizenship.—James H. Harris.

### SINGLE TRACK MEDICAL EDUCATION

The recent centennial of the University of Cincinnati Medical School was made the occasion for an expression from Dr. William T. Sedgewick, professor of biology and public health, Massachusetts Institute of Technology, on the needs of modern medicine and the means of meeting those needs as supplied by the medical curriculum of today. It was no mere coincidence, said Dr. Sedgewick, which led in 1869 to the establishment of the first of our state boards of health, that of Massachusetts, and of the city Board of Health of Boston in 1872, almost contemporaneously with the first fruits of the labors of Pasteur, Lister, and Semmelweis.

The requirements of the field have grown far out of proportion to any measures taken to meet them. Today we have in every one of the forty-eight states a state department of public health, for the proper administration of which at least forty-eight experts in public health and sanitary science are needed, with two or three times as many more for field or laboratory work. The United States Public Health Service also requires scores of qualified public health officers, and finds great difficulty in obtaining them. Still others are needed by the Army and the Navy, while hundreds of American counties, cities, towns, and rural regions either already have, or should have, full time, trained health officers. Private health agencies also, such as the International Health Board of the Rockefeller Foundation, our numerous anti-tuberculosis societies, the Red Cross, and many others, are at present seriously handicapped in their beneficent undertakings by finding it almost impossible to fill the places which they have with competent, trained personnel. The field of industrial medicine and industrial hygiene is likewise calling loudly for trained workers, while school physicians who are really expert mental hygienists, social hygienists and dental hygienists are everywhere greatly needed. And yet, although these facts are patent, we do not find our medical schools, even those of the most modern type, giving much if any attention to the Macedonian cry of the hour for training in public health.

Medical schools, to meet modern conditions, says Dr. Sedgewick, should provide courses in medicine leading to two degrees, the courses diverging after the first two years, on the one hand to the degree of Doctor of Medicine and on the other to the degree of Doctor of Public Health. The fundamentals of anatomy, bacteriology, physiology, and pathology would be the same in both cases for the first two years. It is right to provide generously for curative medicine,—for surgery, for internal medicine, for obstetrics, for gynecology, for otology, for ophthalmology, etc. But that medical school which today fails to provide also liberal instruction in preventive medicine, in public health laboratory methods, in epidemiology; and in preventive sanitation such as the sanitation of water supplies and other branches of municipal sanitation; in preventive hygiene, such as mental, social, personal and health administration—is overlooking some of the most important aspects of preventive medicine and is sending out its graduates unprepared for some of the most serious problems that they will have to face in the immediate future. The census of 1920 shows that our country, lately rural, is rapidly becoming urban, and urbanization spells sanitation, for sanitary conditions largely control the health of the people.

Special schools of hygiene and public health which have sprung up here and there are utterly inadequate to meet the needs of the times and, if medical schools do not want the medical sciences administered by every conceivable substitute which can be picked up, they must meet

the situation by erecting a superstructure for public health training upon the same foundations which underlie medical training, replacing surgery, obstetrics, gynecology, materia medica, therapeutics, pharmacology, and other purely medical subjects by such subjects as will properly equip a modern public health officer.

### DR. WINSLOW GOES TO GENEVA



Dr. C.-E. A. Winslow has been appointed to the directorship of the public health activities of the League of Red Cross Societies at Geneva, Switzerland.

Prof. C.-E. A. Winslow of the Yale School of Medicine, and editor of the public health department of *MODERN MEDICINE*, has been granted leave of absence from the Yale Medical School for the spring term, in order that he may assume the directorship of the public health activities of the League of Red Cross Societies at Geneva, Switzerland. Prof. Winslow will return for the fall term after October 1. The long and creditable connection of Dr. Winslow with public health matters peculiarly fit him for this larger field. Dr. Winslow has served in public capacity in sanitary bacteriology and sanitary biology; he was professor of sanitary biology of the Massachusetts Institute of Technology, 1905-1910; he has been curator of public health in the American Museum of History in New York since 1910. He was a member of the American Red Cross Mission to Russia, and in various capacities has rendered exceptional service in public health engineering. He has contributed largely to scientific literature on subjects in bacteriology of water, ice, and air; purification of sewage, and ventilation. Better choice could scarcely have been made for the responsible post which Dr. Winslow is assuming, and it is expected that this opportunity for extended contact in a greatly broadened field of health activity will be reflected editorially in the pages of *MODERN MEDICINE*.



# HEALTH IN INDUSTRY

## Hygiene, Sanitation, Medical and Hospital Service in Relation to Industry

Official Organ of the American Association of Industrial  
Physicians and Surgeons

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### NEW OPPORTUNITIES IN 1921

THE year 1921 gives greater promise for the fuller understanding of the economic and social value in industrial medicine than any preceding year. Not a little part of this advance in knowledge should come from the fact that the American Association of Industrial Physicians and Surgeons now has an official journal in this department of MODERN MEDICINE.

By this arrangement the long needed opportunity will be available to the physicians in industry for a freer and constant discussion of their problems. Much good has come out of the four annual conferences that have occurred since the organization of our Association. Those industrial physicians who attended went back to their own fields stimulated to new energies and enhanced the value of their services to their particular corporations by incorporating into their work the ideas received from the other members of the conference.

Those members of the Association who did not attend, however, have had to wait almost a year before the proceedings of the annual conferences were finally placed into their hands. Much of the interest in the papers presented at the conference had by that time disappeared, and it is doubtful whether these proceedings were fully digested by the members at large.

The present arrangement, by which the papers and discussions of the annual conferences will appear in MODERN MEDICINE, will give new value to every contribution presented at the conference. All good suggestions can, therefore, be put into practice that much earlier by the readers of the journal.

Of far more importance than this, however, in the dissemination of our ideas, is the opportunity thus afforded for the publication of monthly reviews, news notes, new studies contributed by the membership, and monthly editorials furnished by the members of the Board of Directors, who will also determine the general policy of the Section on Health in Industry in MODERN MEDICINE.

In the last analysis, the officers of our Association, in selecting MODERN MEDICINE as our official journal, have but created an open forum for the membership at large. The success of this arrangement will necessarily, therefore, depend upon the interest of the members in contributing subjects and taking part in discussions thus

made possible. Your Board of Editors can only be held responsible for directing the proffered discussion into what they deem to be the most useful channels. It remains for the membership to bring forth the problems as a result of their own research into the industrial field.

Industrial medicine has stepped out of its swaddling clothes, and needs no longer justify its existence. The experience of the men in the field is rapidly developing a new concept as to the most practical and economic application of the principles of scientific medicine and surgery to the people at large. It is pointing out to the medical profession the place where its energies may best be applied to the problems of the prevention and the cure of disease with the maximum efficiency. It is furnishing the basis for entirely new lines of research as to the sources and control of disease, new lines of treatment, and disease prevalence. Above all these, stands out the fact that industrial medicine, particularly, provides the research worker with a most promising field in the matter of the earlier diagnosis of disease.

To those in the profession who are concerned with the teaching of the medical sciences, the new specialty of industrial medicine has much to offer. Close contact by them with the leaders in industrial medicine will point out to them the necessity of so adding to the present curricula that the new medico may reach his graduation day with a better appreciation of his social obligations toward the prevention of disease, a larger comprehension of the economic value of health, to say nothing of the livelihood offered in this new specialty.

The teaching profession may also learn from this source of research how the graduate in medicine may be prevailed upon to keep up his high standards of practice, while it will also learn the most direct method of intensively educating the public regarding health matters.

When the leaders in the medical profession, the molders of public opinion, the various Foundations that stand for medical advance, take time to bring together the wealth of material that already lies within the medical files of industry, a considerable change in our social concept of medicine will occur. With this realization will come a more efficient application of the science of medicine not only in industrial field, but in public, private, and hospital practices as well.

EDITOR.

# OCCUPATIONAL HAZARDS AND DIAGNOSTIC SIGNS\*

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THE Statistical Bureau of the Metropolitan Life Insurance Company has compiled a little work, the purpose of which is to aid the medical examiners of the company in the field to recognize symptoms of disease of industrial origin. This pamphlet,† entitled "Occupation Hazards and Diagnostic Signs," lists the health hazards under the four principal heads of dust, heat, humidity, and poison. The last is subdivided to show twenty-four of the more common poisonous substances met with in the industries. Each of these health hazards is then related to the symptoms, condition, or disease which are to be looked for. Finally, there are given the industries, processes, and occupations where such hazards exist. This part of the compilation was based largely upon the classic work of Sommerfeld and Fisher, but it has been expanded to include the results of the observations of Doctors Hamilton, Hayhurst, Edsall, Thompson, Kober, Hanson, and others made since 1910, the year in which the list of industrial poisons by Sommerfeld and Fisher appeared.

The chief merit of our pamphlet consists in the presentation of a supplementary list of a large number of occupations in which hazardous conditions are usually found. The occupations are listed alphabetically, and after each is appended a code of letters and numbers which refer back to the previously mentioned hazards. Thus, the first occupation, "Acetylene Gas Makers," appears with the code D1, 21, 18, which indicates that such workers are exposed to the hazards of poisoning (D) from ammonia (1); sulphuretted hydrogen (21), and phosphorus (18); likewise, throughout the entire list of occupations. By this means, the general practitioner can readily determine whether the person examined is in fact suffering from the effect of his occupation; for, by turning to the particular occupation in the list, he learns what hazards exist and what symptoms and diagnostic signs to look for. His examination is in this way made more illuminating; for he can look for the definite signs of disease and these are more likely to be found and properly interpreted than if no such direction were given. Photographic reproductions of pages of this pamphlet are given in Figures 1 and 2 to illustrate the nature of the compilation and the readiness with which it can be applied. Physicians, not specialists in occupational hygiene, can thus learn to detect the effects of industry and, conversely, can eliminate the occupation as the cause when certain symptoms are observed which do not fit the usually observed effects of the occupation.

## Its Usefulness Demonstrated

The pamphlet has been widely distributed among the more than six thousand medical examiners of the Metro-

politan Life Insurance Company. It has been well received by them and it has demonstrated its usefulness. The general practitioner and insurance examiner cannot be expected to know the hazards of industry and the indications of disease resulting from industrial exposure. This pamphlet apparently has served to overcome these limitations of knowledge and experience. It has also had the effect of interesting thousands of medical men in industrial hygiene; it has widened their horizon and has made them agents for the collection of industrial and hygienic information. As they are widely distributed over the United States and Canada, and operate especially among the industrial population, their opportunities for the collection of important data are many.

Figure 1.

## ALPHABETICAL LIST OF HAZARDOUS OCCUPATIONS

(Use This List to find Diagnostic Signs in Occupations)

The capital letters after each occupation, A, B, C or D, refer to the particular hazard, whether Dust, Heat, Humidity or Poisons. The Arabic numerals following the capital D signify the particular poisons to which the workers in the occupation are exposed.

EXAMPLE:—Stiffeners (felt hatting), D 15.

Such workers are exposed to the fumes of wood alcohol which cause, among other symptoms, the following, which can be observed by you: Inflammation of the throat, mucous membranes and of the air passages, conjunctivitis, affection of the retina and optic nerve, dermatitis.

EXAMPLE:—Patent leather workers, B, D 13, 24, 9, 2, 15.

Such workers are exposed to heat as well as to such poisons as lead, turpentine, carbon monoxide, amyl acetate and wood alcohol.

Acetylene gas makers, D1, 21, 18.	Batch makers (glassworks), A, D 13, 5.
Acid dippers, D16, 22, 12.	Batch makers (rubber works), A, D 13, 4.
Acid dippers (electroplating), C, D12, 16, 22.	Baters (tannery), C.
Acid finishers (glass), D 12, 22.	Beamers (textile), A.
Acid makers (chemicals), D 12, 16, 20, 22.	Beam men (tannery), C.
Acid mixers, D 16, 22.	Beamsters (tannery), C.
Acid recoverers (chemicals), D 16, 22.	Beatermen (paper and pulp), C.
Acid weighers (chemicals), D 12 or 16 or 22.	Beater tenders (paper and pulp), C.
Aeroplane factory workers, D 10.	Bed rubbers (marble and stone), A.
Aeroplane-wing varnishers, D 10.	Beer vat varnishers, D 15, 13, 6, 24.
Ammonia salts makers, B, D 1, 21, 20.	Beech molders (foundry), A.
Alcohol stiffeners (felt hatting), D 15.	Benzol still workers, D 6.
Aldehyde pumpmen (chemicals), D 15.	Bessemer converter workers (iron and steel), B.
Alkali workers, D 11, 12, B.	Beta still operators (paint), B, D 22.
Annealers, B.	Bevellers, A.
Art glass workers, D 13, 24, 2, 15.	Billet mill workers (iron and steel), B.
Artificial flower dyers and finishers, D 15.	Blacksmiths, B.
Artificial manure makers, A, D 18, 22, 12, 20, 21, 16.	Blast furnace workers, B, D 20.
Asbestos workers, A.	Bleachery workers, D 11, 20.
Babbit makers, D 13.	Bleachery dryers, B, C.
Bakers, B.	Blockers (felt hatting), C, D 9.
Bar mill workers (iron and steel), B.	Blooders (glove leather tanning), D 4
Basic slag (artificial manure) workers, A.	13.
	Blooming mill workers (iron and steel), B.
	Blowers (felt hatting), A.

\*Read before the Fifth Annual Meeting of the American Association of Industrial Physicians and Surgeons, in joint session with the Health Service Section of the National Safety Council, Milwaukee, Wis., September 29, 1920.

†Philip Leiboff born June 16, 1892, died September 23, 1920. In his untimely death, the field of industrial hygiene lost a most promising contributor. The work described in this paper was largely his creation. For years, he had gathered together material on the effect of the industrial hazards upon health. He had planned to extend his observations along many allied lines and his files remain full of projects and of researches only partially completed. This work, for which his equipment was excellent, must now fall to other hands. Those of us with whom the few years of his creative life were passed will long remember him and favorably. L. I. D.

1. Copies of the pamphlet "Occupation Hazards and Diagnostic Signs" may be obtained by writing to the Statistical Bureau, Metropolitan Life Insurance Company, 1 Madison Avenue, New York City.



Very serious limitations of the pamphlet are clearly realized. It is very far from complete either in the list of hazardous occupations or in the list of hazardous conditions or substances met with in industry. The list includes only about five hundred occupations and only the most prominent of the health hazards. Furthermore, as the pamphlet was intended primarily for the use of the medical examiners of the Metropolitan Life Insurance Company, it embraced only those matters which would be important in their special work. A number of important considerations which would have been included in a more general work were omitted. Such occupational diseases and conditions as anthrax, caisson disease, and electric shock were omitted because they would not occur in the course of medical examinations for life insurance; so also were industrial hazards which have only local or temporary effects, poisons not frequently met with in industry, and, also, such which cause disease, whose symptoms are subjective and require a clear description by the per-

son examined. In short, the work was limited to an effort to acquaint an insurance medical examiner with the recognizable symptoms of the chronic effects upon health of the more important occupational hazards, excepting the most obvious ones.

The possibilities of and, in fact, the need for the extension of this work is very clear. The realization of such extension must be left to such associations as the Health Service Section of the National Safety Council and the American Association of Industrial Physicians and Surgeons. We recommend that a committee be appointed from these two groups to consider ways and means for extending the work we have begun. Such a committee could get in touch with industrial physicians and factory inspectors, send them copies of our pamphlet and obtain from each answers to questions similar to the following:

1. What additional hazards do you note for any of the occupations listed?
2. What particular occupations involving hazards are you familiar with which are not listed in the pamphlet sent you; what are the conditions of work and hazards involved?
3. What symptoms do you note for industrial hazards which differ from those tabulated or which are in addition to them?

The results of such an undertaking, if carried out earnestly for a period of years, should be very valuable indeed. A reference work of the highest order both in completeness and in scientific accuracy would be produced, industrial hygiene would be most stimulated as a branch of preventive medicine, and much valuable health work accomplished. Thousands of persons suffering from occupational disease would ultimately be discovered and the first step taken to control the conditions which make for such disease.

## INDUSTRIAL PHYSICIAN DIES

Dr. H. H. Smith, chief surgeon of the American Rolling Mill Company, Middletown, O., passed away in Indianapolis, Ind., November 22, 1920.

Dr. Smith was one of the outstanding figures in industrial medicine in the United States. He did not take up the study of medicine until he was thirty years of age, having spent his earlier manhood in teaching school and other work along educational lines. It was his conviction that in preventive medicine lay the great hope of the world, and he saw that the place to work out his theory was within institutions where large numbers of people could be dealt with as a unit.

Dr. Smith was born in Kokomo, Ind., on June 6, 1872. He graduated in medicine from Indiana University in 1907. After serving as an intern in the Deaconess Hospital at Indianapolis, Ind., his first position as a physician was in the State Reformatory at Jeffersonville, Ind. Here he had his first opportunity to develop plans for institutional work along medical lines. In 1911 Dr. Smith superintended the plans for a new hospital for the American Rolling Mill Company of Middletown, O., and became its physician. For the first five years he was the only physician in charge. Later the medical organization grew until at the time of his death it numbered three physicians and thirteen nurses.

Dr. Smith's warm personality helped him to win the hearts and confidence of those he served. He early realized that the success of industrial medicine is largely a matter of building up confidence between the organization and the medical department.

Figure 2

## Hazards and Diagnostic Signs

HEALTH HAZARDS	SYMPTOM, CONDITION OR DISEASE TO LOOK FOR	INDUSTRIES, PROCESSES AND OCCUPATIONS WHICH OFFER SUCH EXPOSURE
<b>A. DUST</b>		
Mechanically or chemically irritating, or infectious dust.	Chronic catarrh of the respiratory and digestive tracts; inflammatory condition of the eye, ear, nose and throat; ulceration of the nasal passage; fibrosis, tuberculosis.	Marble and stone, mining, phosphate, cyanamid, asbestos, textile, alkali, button, etc., mold tries; grinding, sand blasting, polishing, cutting, chipping, buffing, mixing materials in rubber, glass, pottery and chemical industries; sorting of rags, file making, comb making, etc.
<b>B. HEAT</b>		
Including cold and variations in temperature.	Anemia, general debility, catarrh, "colds," rheumatism, stiff joints, lumbago, Bright's disease, skin eruptions, cancer, fibrosis, premature old age, cataracts, retinitis, conjunctivitis.	Iron and steel mills, smelters, foundries, metal-working plants, glass factories, electro-chemical works, laundries, glue manufacturing, sugar refining, bakeries, confection making, ice manufacturing, kilns, potteries, color works, etc.; tempering and annealing, canning and preserving (hot steam process); dining car workers, cooks, stokers, firemen, stillmen, blacksmiths, furnace tenders.
<b>C. HUMIDITY</b>		
Including moisture, wet, dampness, etc.	Diseases of the respiratory passages, neuralgic and rheumatic affections.	Pulp and paper mills, tanneries, felt hatting (wet processes), textile industries (especially cotton), furniture (glue department), sugar refining (filtering process), canneries, oilcloth and linoleum (drying rooms); gluing, clay working, plaster of Paris working, steam vulcanizing, paint manufacturing (color department), dyeing and clearing.
<b>D. POISONS*</b>		
1. Ammonia.	Irritation of the mucous membrane and chronic bronchial catarrh, edema of the lungs.	Coke ovens, gas plants, ammonia gas collection and ammonium compounds making, ice manufacture, refrigerator plants, mirror silvering.
2. Amyl Acetate.	Nervous symptoms and palpitation of the heart.	Lacquering, enameling, bronzing, gilding, leather finishing, patent leather making, wiring for incandescent lamps and oilcloth manufacturing; polishers and buffers.
3. Aniline Oil.	Profound anemia, slowing of the pulse, disordered nervous symptoms, cyanosis, spasmodic muscular pains.	Manufacture of aniline oil, paints, colors, dyestuffs, explosives, photographic materials; rubber compounding and mixing, lithography, printing, dyeing.

\*For the data presented under this heading, the revised and translated "List of Industrial Poisons" compiled by Sommerfeld and Fischer, has been drawn upon largely. The arrangement is similar. (See U. S. Bureau of Labor, Bulletin No. 100, May, 1920.)

# PRACTICAL METHODS OF REDUCING FATIGUE\*

By FRANK B. GILBRETH, LL.D., MEM. S.I.E., MEM. A.S.M.E., AND L. M. GILBRETH, Ph.D., MONTCLAIR, N. J.

AT THE present stage in the progress of fatigue elimination, not much will be gained by disputes as to the relative efficiency of various methods and devices.

The important thing is to eliminate *at once* all unnecessary fatigue that can be located, and to insure that the worker is not fatigued by his day's work beyond the point where he can recuperate completely during a night's rest.

Those interested in the subject are acquainted with the necessity of making a fatigue survey to determine what is being done along these lines and what can profitably be done; with the benefits of a "museum" where fatigue eliminating devices from all sources may be collected through photographs, drawings, and, preferably, models; with the necessity of arranging all possible work so that it can be done part of the time standing and part of the time sitting; with the importance of supplying work chairs and rest chairs, fitting the special demands of the work, and the needs for recuperation from it; and with the importance of rest periods.

## Test Value of Rest Periods

Too much time has been spent lately in dispute over the necessity for and duration of rest periods. The scientific determination of the need for and the length of such periods is no work for an amateur. The best practice demands that such periods be introduced wherever there is a question as to the fatigue of the worker, with an understanding that the arrangement is temporary. Further investigations may show that the work provides sufficient rest periods because of unavoidable delays, or that a change in methods may make different rest periods desirable. No one has a right to discredit or discard rest periods after a half-hearted attempt to install them. Usually, when changes are made, so many factors are involved that it is almost impossible to place the blame for a failure where it belongs, and too often it is attributed to the rest period, which has probably been introduced in spite of the opposition of some, who are only too glad to accent anything that may seem to discredit it.

The use of the Home Reading Box, the benefit of change in posture, the influence of lighting, heating, and other work conditions are well understood. These are all very practical aspects of the work. Equally practical, though perhaps not so well understood, is the new attitude toward work that is a part of fatigue elimination. Viewed from the fatigue study standpoint,—which is closely related to the motion study standpoint,—all work becomes interesting,—becomes a worth while subject to investigate. Unless already investigated and standardized through motion study, the work method under inspection is probably wrong and offers a field for improvement. The problem may be considered in various ways: for example, as one of (1) worker; (2) surrounding conditions and tools; (3) motions. Again, as a problem of decisions and motions, each part of it may be considered as consisting of three types of motions: (1) those almost beyond the capability of the one performing the work, but which may be learned by him, and which require the best in him; (2) those well within the grasp of the person doing the work, which he may easily reduce to habit and perform with ease and pleasure; (3) those extremely simple for the

one doing the work, which may well be passed over to someone of less experience, training, or capability. Again, the work may be considered as consisting of cycles of motions, the motion cycle having sixteen elements in different combinations. These elements are: search, find, select, grasp, position, assemble, use, disassemble or take apart, inspect, transport, load, pre-position for next operation, release load, transport empty, unavoidable delay, avoidable delay, and rest for overcoming fatigue. Again, the work consists of the motions, and the resulting fatigue—the problem being to accomplish the work with those motions which are produced with least fatigue.

## Devise the One Best Way

Some of the investigations suggested by these methods of attack upon the problem require intensive training and special apparatus. Many, however, may be made without special training and with no apparatus, through keen observation and interest in the subject. The fundamental idea is to *think* in elements of motions and the resulting fatigue, with the aim of devising the one best way to do the work. In order that this may be most profitable, a laboratory, or at least a laboratory trained worker, to measure and coordinate the findings of the thinkers, will mean the greatest economy of effort and most profitable and permanent results. Such laboratories and such workers are becoming more and more a part of industry. The supply will meet the demand, and will be forthcoming quickest when everyone interested in fatigue goes through the preliminary stages of waste elimination for his own work processes, in the plant and out.

Investigations in the science of fatigue elimination are going on everywhere. The Society of Industrial Engineers has established an International Committee for the investigation of problems of eliminating unnecessary fatigue in the industries. This Committee is collecting data on fatigue elimination in all countries and is glad to cooperate with all interested in the subject, to receive into its membership a representative of any body interested in the subject, and to place its findings at the disposal of everyone. Data is being collected in the fields of psychology, physiology, psychiatry, and the allied sciences. Thinkers in all countries are attacking the problem. We are bound to have the facts placed at our disposal. The important thing is to introduce broadcast the *practice* of studying actively with the aim of eliminating fatigue and of supplying fatigue eliminating methods and devices at the earliest possible moment.

If every member of the community would study his own activities for *one day*, and try to carry out the improvements that are bound to suggest themselves, no matter in what amateur fashion, the solution of the problem of eliminating unnecessary fatigue would be assured. The remedy lies simply in the direction of the attention toward the special problems at hand. Intelligent study of these problems insures a method of correction adapted to existing conditions. As for the cost involved, much important work in this direction can be accomplished simply by learning to *think* in terms of cutting out fatigue, but even when elaborate methods are necessary and costly methods of investigation are employed, fatigue elimination campaigns more than pay for themselves in results both in increased efficiency and in cooperative effort.

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# FUNDAMENTAL REQUIREMENTS FOR SUCCESSFUL MEDICAL WORK IN INDUSTRY\*

BY W. A. SAWYER, M.D., MEDICAL DIRECTOR, EASTMAN KODAK COMPANY, ROCHESTER, N. Y.

IT IS my desire to focus our attention on what seem to be the logical basic essentials for industrial medical practice. There are individual ideals, held by at least some of us, which keep us ever pushing on toward a fuller program, which is all very well, if at the same time the snare of too much differentiation is avoided and all possible progress is made along lines of cooperation and interest from the upper executive realms down through the medical staff to the rank and file. Therefore, first of all there needs to be a spirit of sympathetic understanding from the executive head of the concern; in the second place, it is impossible to emphasize the value and need of adequate personnel—adequate, first in quality, and then quantity. A service is hopelessly handicapped without the spirit of sincerity and confidence, emanating from the head of the medical organization, reflected and augmented by the personality of each assistant, doctor, nurse, and even the stenographer, and this must be regarded as essential in order to warrant the faith and assure the support of the employer and the employee.

## Plan According to Needs

It seems hardly necessary to mention equipment and quarters, for while they are of no small importance, there can be no definite rule universally applicable. Granted my first condition, viz.,—cooperation from the top—and these will adjust according to the need. That the quarters should be clean, cheerful, and businesslike goes without saying. It should accommodate with the necessary privacy and equipment. This should include an adequate system of records as well as the medical and surgical accessories which the work may demand. Elaboration of armamentarium, however, is no indication of the success of the Department, but the kind of a program, the development of the possibilities within the scope of the service constitute the best evidence of the usefulness of the organization. I once visited a factory dispensary where a full time doctor was in charge and where it was only necessary for an employee to come to the doorway and ask for this or that medicine, much of which was in liquid form in bottles all labeled with directions, which was handed out without a question or a thought as to why it was wanted or how it was to be used. A large percentage of the clientele of this physician never crossed the doorsill and frequently took with them this or that favorite remedy for the use of a fellow worker. This might be called industrious medication but not industrial medicine. The industrial physician who realizes that certain changes are unavoidably overtaking the field of medicine and who contributes toward giving hygiene and education the place they are inevitably to assume is surely adding length to his stride for success.

Time does not permit of a comprehensive survey of all that enters into success in this field, for there is as much needed here as is needed elsewhere in the field of medicine, but a consideration of its manifold opportunities always brings out one important fundamental, namely, the honest, salutary, and intelligent physical examination.

The first thing that enters the mind of a doubter of the value of the routine physical examination is the supposedly unwilling or even antagonistic attitude on the part of the employee. In assuming that this attitude is characteristic it is my experience that too much is taken for granted, and difficulties arise because not enough thought is given to the method of procedure. Thorough periodical physical examination, properly recorded, carefully explained to the examinee, with the necessary provision for following up the delinquents and defectives, develops a very solid basis for a thorough preventive and curative program. This service, being part of a general program, can be understood, then appreciated, and ultimately greatly desired by the recipient. It may even be expected that in some not far distant day the value of this procedure will be such that these examinations will be asked for by the applicants for employment, in order that they may be assured of greater safety and efficiency through proper placement, knowing that such procedure will add greatly to their welfare. The attitude of the industrial physician can do much to shape this end.

When physical examinations are mentioned, all that is usually thought of is a rather superficial survey at the time of employment is sought with an organization. Anything beyond this is neither contemplated nor hoped for. Such a cursory examination may be better than none; but where can the line honestly be drawn? The *raison d'être* for any medical department, the one mutually advantageous to both the employer and the employee for its maintenance, is to sustain good health for each individual, with the placement of every worker at the job for which his physical qualifications at least do not unfit him. This not only requires a thorough examination but obviously presages job analysis, for how can the doctor determine a man's fitness to do a certain task unless he knows just what that job entails? In many plants neither the doctor nor employment department knows the requirement of a given job. By no means have we begun to realize all the possibilities of the proper selection of workers from the physical standpoint, and we haven't even scratched its surface in regard to the mental adaptations of the worker. It doesn't require much familiarity with the processes of mental analysis to become impressed with its pertinence to this subject, and there seems no reason why this may not become, eventually, a very important phase of the complete physical examination, this to include not only intelligence tests, but something which will bring out motives, desires, inherent stability, and balance. Let this engage your thought as you go about your work, and see if something of benefit may not evolve.

## Estimate the Human Machine

But to return to present requirements. When the physical examination is a means to a worth while end, and is not made an end in itself, little opposition arises. As preventive measures are extended, less of the narrow viewpoint will be in evidence. Then, too, much of the old time opposition to the physical examination, as too often simply meant rejection, will pass away as we come to feel that every man has a right to work, and that jobs must be found in which all can work with safety.

\*Read before a joint meeting of the American Association of Industrial Physicians and Surgeons with the Health Service Section of the National Safety Council, September 29, 1920, Milwaukee, Wis.

It may be in order to detail here my conception of conducting the thorough physical examination which is a satisfaction to all concerned. Assuming that the applicant has been interviewed, perhaps shown the job, trade tested, and subjected to intelligence tests, and is at last sent to the doctor for a physical examination. With him, as a matter of routine, come the specifications of the job for which he is scheduled. First the preliminary data are obtained by a nurse or a clerk, together with weight-taking and eye and ear testing. An introduction to the doctor then takes place, when ensues a rather detailed questioning as to previous medical history. This is done to advantage by the doctor, as it gives him an opportunity to size up the individual. Then comes the actual physical examination, which should be as painstaking as that of the best insurance companies, if not as that of our army. Only on such an examination can a true and complete estimate be made of the human machine. If an impairment is found, it should be explained briefly, though sympathetically; if cause for rejection is found, such information should be given to the examinee as the case indicates. Perhaps this might be supplemented by little leaflets prepared for such exigencies, to explain in a more detailed way just what the condition involves. If the man has not previously been aware of the condition, he will leave feeling perfectly certain that real service has been rendered; whereas, if the examination is made in silence and the report of rejection returned to the employment department in a sealed envelope, it may be counted upon to result in resentment or ill feeling. Only by putting all the cards on the table is greatest satisfaction rendered. At the conclusion of the examination the doctor should hand the examinee a blank form on which is asked questions relating to hygiene and habits and the general family health. In doing this it should be explained by the doctor that a written report of the examination will be available to the examinee by properly filling in this blank and returning it. As a rule, more reliable answers to such questions are obtained when there is time for some consideration. When this information concerning personal habits and family health is received, it should be reviewed in conjunction with the physical examination and the report sent out outlining any impairment or correction of habit which seem indicated. A statement should go with it saying that this report is a basis for future examinations to which the employee is entitled yearly or oftener, if necessary, explaining that the maintenance of health is an asset, and any real advancement or promotion in business is precarious without it; and that health is more often than not the result of vigilance and proper living. The future relationship of the medical department to this individual is built upon this initial contact and understanding, for better or for worse, as the case may be.

If the employee is fit physically, then the function of the medical department toward him is preventive, through health education; if, however, he is in need of better glasses or dental attention, or has an impaired heart, then "Follow-up" is plainly the duty of the department, and curative as well as preventive measures are in order. Here we are immediately concerned with good working conditions, sanitation, proper nutrition, studies in fatigue, etc. Only by thus intelligently, and I may add, scientifically, beginning a relationship with each new employee can the medical department adequately cope with the problems as they arise, in this way largely will the employee be impressed with the ability of the medical department to serve his needs.

The plan herein outlined would need modification or

adaptation to each industry. Groups of aliens, for instance, who understand but little English, increase the difficulty, and it might be that service in conjunction with a sick benefit association, having periodic physical examinations as a requirement for membership, would afford the requisite point of contact. Some opening can usually be found. If the intelligence of the worker does not permit him to take advantage of what is offered, the medical department has recourse to a persistent program of education and follow-up, not failing to avail itself of the advantages of publicity work, urging and arousing the man with impaired physique to remedy the condition. Eventually the few who refuse altogether to heed advice may be discharged. The extent to which this can be done, together with the percentage of rejections at the time of initial examination, bears a direct proportion to the labor supply. If industry is to make the most of its findings, it should be able to pass these impaired workers in each industrial community on to organizations which find satisfactory employment for the crippled and for those with weak hearts or lungs. These men and women who are not able to pass as able bodied workers should have the opportunity for appropriate training and subsequent positions just as rightfully as those incapacitated from accident. Inasmuch as the goal of industrial medicine is more efficient and happier workers, it should be our constant aim to pass at the time of initial examination only those individuals who are able bodied and properly equipped to be able to stand the strain of our present industrial life. Those who are passed certainly deserve the opportunity of care and supervision, in order to maintain their potential qualities of strength, or to eliminate in due time an impending handicap.

### The Records Have Value

The value of periodic re-examination depends very largely in the efficiency and the use made of the records kept. Industry generally is not making the most of its advantages here. Organizations long established frequently find that among their older employees, looked upon as healthy, are those succumbing to ailments of various kinds and often sudden death results from conditions which have been developing gradually, diseases which they might reasonably have expected to prevent or at least retard by a systematic periodic survey or inventory of the human physical equipment. The value of such survey is by no means confined to the employee but would often save years of valuable experience to the company. This is but another evidence of what almost seems a national trait—failure to conserve. We waste our natural resources, many fail to conserve their finances, and most of humanity are prodigal with their health, even though all the while we are brought closer to the realization that taking care of what we have pays every time. As applied to the unskilled employee, it is, perhaps, from the company's position not so *obviously* worth while; but when the turnover can be held within normal limits it will surely bring results. Of those who handle food in any way—such as in company restaurants—examinations every three months should be made, together with exacting supervision on the part of the one in charge, to see that a very high standard be maintained in regard to colds or other contagious conditions.

With respect to periodical physical examinations for all executives, nothing in industrial medicine can pay such handsome dividends and so completely sell the worth of the work as a whole. It is a notable fact that most men holding large positions, because of their responsi-

bility, infringe on their health and fail to take into account those things which make for continued efficiency and longevity. Each year records a large number of men in high positions dying prematurely of diseases that could have been prevented. Now, I realize full well that merely examining such men yearly or half-yearly and appraising them and giving advice does not necessarily spell conservation, because most of them are in a position to receive good advice. Only when there is a well established channel for taking care of such cases will results be obtained. When the medical department comes into the possession of facts which plainly indicate that a given executive needs rest or treatment, the word should be passed on to the head of the company or of the department, when the necessary pressure could be exerted to bring about proper action, and thus many years of useful service by so-called invaluable men could be saved to the company.

A careful study of absenteeism from sickness reveals many interesting facts. This is best made at the time of stated physical re-examinations when records of absenteeism have been consulted in connection with what is learned from questioning. It may be found by such examination that the employee is no longer fitted for the work he is performing and perhaps a transfer or short rest will re-establish health.

### Carry the Obvious Risk

Industry cannot afford to carry too large a percentage of individual liabilities or potential hazards; yet, as it is agreed that everyone should be given the opportunity to work at some form of profitable employment, a certain proportion of these handicapped cases must be absorbed. The workmen's compensation boards need to cooperate if industry is to admit to its ranks men and women who are obviously accident liabilities. At present no protection is given to the employer and, naturally, he does not wish to take on the obvious risk.

Whether we like to admit it or not, most of us realize that the type of medical care which the average person receives is not always the best; time and equipment on the part of the average practitioner are often lacking, if not ability and desire. How often do you hear of this or that worker who has been to not only one doctor, but several, without receiving an adequate "going over"? One man treats him for this and the next man treats him for that, and at the end of the period the individual knows no more about his condition than at the start and he may be far from being any better. Quite recently a girl stepped into one of our dispensaries and said she would like to know whether we thought she had appendicitis. She was questioned and examined carefully and told that the indications were very slight and given some advice. She then related that her doctor told her she might have to have an operation and she didn't care for it. She was asked to what extent her doctor had examined her and she said he felt of her side as she stood by his desk, making pressure over the region of the appendix through her clothing. She flinched somewhat and he then gave her some tablets and told her that if she were not better in a few days, it would be necessary to have the appendix out. That actually happened and is, I fear, but an example of the sort of thing that is occurring daily. Any doctor engaged in industrial work can repeat many such instances, all of which lead to the conclusion that the greatest need today for the worker in our industries, as well as for all our population, is a chance to know the truth. This is not offered as a criticism, but it is a fact to be reckoned with.

Is it not a logical development for the periodic physical examination to become a diagnostic clinic? In this, our opportunity to give the worker the truth as best we see it, thus forewarning and forearming him, is perhaps the most effective weapon we have against charlatans, quacks, and pretenders generally. For instance, are tuberculosis associations and clinics ever going to gain real headway against the disease until industrial communities and the business world generally make a thorough search for it, both at time of employment and later? And in attempting to uncover these many hidden cases, let us not forget that facilities for their treatment and care are shamefully inadequate and few. Cannot industries group together and eventually find a way to conduct their own sanatoriums at a minimum cost, or with a united front demand that public health departments bestir themselves to provide accommodations suitable to the need, and free from the hampering influence of civic politics? A system of physical examinations for workers which gives a diagnosis and points the way to continuous health is joining hands with the new vision of public health which now seems to be finding expression throughout the country, in legislation and propaganda for the mother, the baby, the child, the young boy and girl, and, finally, for all adults. Once the importance of health as a business asset or a basis for advancement in life is sufficiently understood, the helps offered will be popular and real results will follow. The movement toward health conservation is expressing itself through various channels. The general public is providing for it, accepting and demanding it as its right as it becomes health conscious.

The part that industrial medicine can play in this large program is very vital. Many things in the way of public health program can be inaugurated and carried out with the cooperation of industrial medicine, but first and foremost must be considered carefully the fundamentals of successful industrial work; for until in each unit right plans and methods are worked out, the greater achievement will still elude our grasp.

### Summary of Requirements

Successful medical work in industry, then, must have:

(1) Sympathetic cooperation from the top of the organization; (2) a personnel providing a staff of adequate proportions and character; (3) equipment adapted to the requirements of the department; and (4) a program in which ideals plus daily practice will result in consistent growth.

*A physical examination, complete and painstaking, is of major importance.*

(1) Initial or entrance examinations are for purposes of placement and exclusion. To acquaint worker with his physical impairments. This can be made interesting and helpful to the worker. Get his interest; his cooperation in the end makes for the more efficient and contented worker, which is our goal.

(2) Periodic re-examinations not only of the rank and file, including special groups such as food handlers, etc., but also the executives of the organization. Follow-up to see that work does not prove hazardous and that advice as to corrections is being followed.

(3) It contributes toward reducing sickness incidence—hence cuts down absenteeism.

(4) Promotes longevity of service.

(5) Dovetails with efforts of public health work in detecting contagious disease and should be the surest and most effectual way of finding those members of a community suffering from tuberculosis or other prevalent

diseases. Greatest opportunity today of medical science is through prevention; and physical examination is fundamental in prevention.

(6) Physical examination leads into all other branches and parts of medical work in industry; diet, recreation, mental hygiene, housing and working conditions, fatigue, and even to the training and raising of children, and the health of the worker's entire family.

(7) Finally, physical examination will often provide a diagnosis and help effectively to fight quacks, charlatans, and other pretenders. It will teach the worker the truth, something he is mightily interested in, thus he will be forewarned and prepared. Systematic care, with periodic physical examination saves the workman on the one hand from ill advised treatment, and on the other from the neglect of important conditions.

## OREGON SYSTEM OF MEDICAL SERVICE\*

BY F. H. THOMPSON, M.D., MEDICAL ADVISER, OREGON STATE INDUSTRIAL ACCIDENT COMMISSION, SALEM, ORE.

THE Oregon system of medical service is similar to that of some other states, but Oregon is probably the first state to put into active operation a regularly equipped physiotherapy department. The Oregon law, aside from administering a compensation fund, makes provision for the prevention of accidents, this work being done in conjunction with the State Labor Commission; but in case of accidental injury, covered by the act, the medical department aims to care for the injured as completely as possible. This care will be divided, for the sake of convenience of consideration, into four general sections: (1) primary care; (2) proper after-care; (3) reconstructive surgery; (4) physiotherapy.

Practically, the injured has the right of selection of his own physician. This does not apply in hospital contract cases where the contractor furnishes medical aid through a contract physician. In Oregon the state law admits of such contractors, under certain stipulations. However, in case where the contract physician has proved to be incompetent by bungling of cases, the Commission reserves the right to demand his removal and his replacement by a competent physician; if refusal is given, the contract may be canceled. Or, in case the Commission considers that the man is not receiving proper care, it reserves the right to select a physician other than a contract physician for the completion of the care of the case; that is, to transfer the man to a different physician, or give him a list of three or four physicians, capable and well qualified for that particular type of case, and allow the man to select from the list the one whom he desires to render the treatment. All medical care, even by these selected surgeons, is done according to an adopted fee schedule. The schedules for the states of Oregon and Washington are identical and accepted as standard for industrial surgery by the state medical societies of the two states, respectively. The fee schedule is such as to reasonably remunerate for competent care, and very little complaint is ever raised—and none of serious import. If a case does not progress satisfactorily it is reviewed by the Commission, or a consultation ordered, and any special care needed is provided. This is done in hospital contract cases, also, at the expense of the person holding the contract. Radiographic service is paid for according to schedule, but excessive and unnecessary duplication of plates is not tolerated. The Oregon law provides for transportation and hospital and surgical care and nursing. While ordinarily \$250 is supposed to be sufficient to cover the expense incurred in any ordinary case, there is, in reality, no limit to what may be expended for the restoration of a workman, provided that prior to expending more than \$100 for hospital, \$100 for surgical, and \$50 for trans-

portation and other expense, the Commission be consulted and its approval for a greater expenditure obtained. This provision prevents an unscrupulous surgeon from piling up an enormous bill without knowledge by the Commission. This excellent provision makes possible two very important features of the Oregon system, namely: Reconstructive surgery and physiotherapy.

### Surgery for Restoration

There are many cases calling for reconstructive surgery. This is especially true in maltreated fractures and soft tissue injuries that can have restoration of function by competent and well timed surgery. Many cases have been so treated under the Oregon Commission with most gratifying results. Examples are: a Pott's fracture that has been unreduced and united in vicious position, thus destroying the proper relationship between the ankle mortise and astragalus and throwing off center the weight bearing line through the astragalus, or the similar disalignment of weight bearing in unreduced fracture at lower third of tibia and fibula, or in a fracture in which rotation of the fragment has occurred, and in ununited fractures; also tendon contractures and peritendonous adhesions and severed tendons that have not been sutured, or unsuccessfully so, and many allied conditions. The Commission in these cases selects the surgeon for the particular work in hand and orders the injured man to report to him for such care or operation as deemed best. Generally the man is anxious for restoration, but there are exceptions. In the cases that are not prone to accept restorative surgery, the disability award is made on the basis of disability that one would reasonably suppose to exist had the injured submitted to operation, and not on the basis of disability existing without operation, the one object, of course, of reconstructive surgery being to restore the injured to as nearly a normal condition as possible and thus aid him in the strife for existence. No permanent partial disability is awarded until all possible restoration of function has been accomplished. This makes essential the practice of physical therapeutics.

The past experience in Oregon produced so many cases of fractures too long splinted, in which peri-articular fibrosis had occurred, atrophy of muscles and muscle contracture, leaving ankylosed or partially ankylosed joints, that it was believed expedient to try out massage, physical manipulation, and electricity and hydrotherapeutics to see what results might be obtained toward restoration of function. Accordingly, a great many cases with marked disabilities were given such care, resulting in such marked and early improvement that it was deemed advisable to make a study of the work being done in Army reconstruction camps. This study was carried on by the author and Commissioner Marshall, who, after seeing the work that was being accomplished by proper and sometimes pro-

\*Read before the Seventh Annual Meeting of the International Association of Industrial Accident Boards and Commissions, San Francisco, Calif., September 20-24, 1920.



longed after-care, decided to recommend to the Oregon Commission the establishment of two fully equipped physiotherapy departments; one to handle cases coming from the Columbia River Basin and the eastern part of the state, and one for the Willamette Valley and the southern part of the state. This work was considered so important that the departments were fully equipped with hydrotherapeutic, electric, and other equipment and trained Army aids employed to carry on the work; each department being under the direct supervision of returned overseas service men who had had splendid orthopedic training and were familiar with the various angles of physiotherapy. With such organization all serious fracture cases as soon as union has occurred, are ordered to one or the other department for early treatment, with the object in view of lessening permanent disabilities and shortening temporary time loss. Many permanent partial disability cases are such because too much time is allowed to elapse before passive and active use. Contractions and fibrosis of too long standing can not be completely overcome. The results have been most gratifying. The surgeons throughout the state, with few exceptions, are glad to have the after-care off their hands for, primarily, their offices are not properly equipped for such treatment. And again, the average surgeon is not fully posted in the methods of proper physical treatment in the after-care of fractures and other like conditions for, as a rule, their main object is to secure a union in good alignment, leaving nature and ordinary use to accomplish what they will in the restoration of function. There was some objection on the part of some surgeons who imagined that the calling of the patient for such treatment was a discredit to their work. This objection, however, was overcome when the object of the treatment was explained. Now, when a patient is called in for such treatment the physician is sent a carbon copy of the order stating the reason for calling the patient in. Again, this early review by the medical department makes possible the detection of remedial deformities at a sufficiently early state for correction. In every such case, or in case the patient is transferred from one physician to another for special care, the original physician, in case of fracture or other specific condition, is paid in full for the care of the case, as per the Commission's fee schedule, and the special treatment is paid for in addition. Of course, as far as physiotherapy is concerned, this work is done by salaried aids. The hospitals do not object to the establishment and conduct of these institutions, for they are essentially institutions for follow-up or after-treatment and involve ambulatory cases only, and, under the Oregon law, when a case becomes ambulatory, it is no longer a fit hospital case, and if the man remains at the hospital it is at his own expense, as the object of compensation is to pay sustenance during the period of incapacity. In Oregon the hospitals care for the Commission cases under a set fee schedule.

To give some idea of the magnitude of the work will say that at present there is an average of 605 treatments per month given at the Portland department and an average of 534 at the Salem department.

The Portland department is under the direct supervision of Dr. Richard B. Dillehunt, dean of the University of Oregon Medical School and a returned major in overseas service. The Salem department is under the direct charge of Dr. C. A. Downs, a captain in the orthopedic overseas department, and these men determine what treatment shall be had, supervise the giving of such treatment, and determine when treatment should be terminated. Permanent partial disabilities are estimated by the chief medical examiner.

### Study Humane Side of Problem

When physiotherapy has accomplished its work, the Oregon system goes a step further and gives its unfortunate who have suffered major disabilities of a permanent nature vocational retraining. This work is done only after the permanent partial disability award has been made. The first law of nature is self-preservation. The able bodied and strong mentally and physically can well fulfill the law of the survival of the fittest, but the less fortunate deny the proposed law that all men are free and equal and prove that the greater the handicap the less possibility of successful strife in the commercial world. This holds true in the world of industry. This intensely economic, social, and humanitarian study and problem is, of necessity, boldly faced by the state industrial accident commission, and it was deemed a wise provision to make it possible that the ones who were greatly handicapped might be placed on a little more equal footing with the unhandicapped by being retrained to some line of work that they could adequately fulfill. It is the belief of the Oregon Commission that the compensation law is a law not for the employer only, and not to solve a sociological problem only, but, primarily, is a provision to aid the man who has offered his fingers and hands as a sacrifice on the altar of industry, and to make it possible for those dependent upon him to meet at least the bare necessities of life during the period of the incapacity of the bread-winner, and, if it be possible, surgically or educationally to restore the injured to usefulness in some plane of active life. They, therefore, have succeeded in securing the passage of amendments to the Oregon act that virtually remove the limit of what they may do for an injured workman if by so doing it will restore him to proper earning capacity and remove the possibility of himself and his family becoming dependent upon the alms of the public.

Briefly summarized then, under the Oregon law the injured man has the free choice of his own physician, with the reservation that the Commission may select a physician to make a special examination or give special treatment if the case may justify it, thus reserving to the medical department, ultimately, full control over selection of physicians.

Reconstructive surgery is the rule, if properly indicated, and to my mind is one of the greatest steps the Commission has taken. This, I believe, and know, from actual observation of what can be accomplished from such measures.

The Oregon system certainly urges physiotherapy as the only proper procedure to shorten time loss and lessen permanent partial disabilities. When all possible has been done for restoration of function we advocate strongly vocational retraining for the injured workman who has suffered a major permanent disability. All work is done according to fee schedule and all hospitals are paid according to fee schedule. Ambulatory cases are considered non-hospital cases.

In cases of amputation temporary total disability is continued until an artificial limb can be secured and the State commission pays for the artificial limb.

The State Industrial Accident Commission of Oregon believe it is its duty to disseminate the principles of accident prevention and to do all possible toward restoration of the severely injured to some phase of industrial usefulness. It is their hope and desire that the administration of the medical department be so conducted as to be the most helpful to the industrially injured, most economic to society, and satisfactory to the employer.

## THE HUMAN FACTOR IN INDUSTRY

THE development of modern industrial history has been a war against waste, seeking economy of effort in methods of production and the utilization of raw materials. Workers and capital have been gradually concentrated under one management; the machinery of manufacturing carefully watched and developed to such an extent that the human factor was until recently practically ignored. The tasks to which the worker was set became more and more simple. He lost individuality and became, in fact, a mere mechanical appendage which could be easily procured, easily replaced, apparently requiring little consideration.

The development of a spirit of solidarity among workers and their organization which may not only retard production but force issues has caused the manufacturer to take cognizance of the situation and to establish a means of meeting the problems involved. A recent book by Frankel and Fleisher,<sup>1</sup> of the Metropolitan Life Insurance Company, entitled "The Human Factor in Industry," reviews and studies this scheme from the point of view of the man who seeks a finer adjustment of the parts of an extremely complicated machine, summarizes the results of these attempted adjustments, and suggests lines of future activity. There is a general agreement among community, employer, and employee that the fundamental purpose of industry is to produce the greatest possible quantity and the best quality of useful commodities with the least possible cost and effort. It is the problem of the labor administration to make each worker and each hour as effective as possible. The authors touch in turn on the internal problems of hiring and holding; education, industrial and vocational; working hours and conditions; medical care; methods of remuneration; refreshment and recreation.

More and more the employer has to enter into and take cognizance of the external interests of his employees, and, although housing, recreation, educational and health facilities are of great importance, he must always bear in mind that the fundamental demand of the employee is a fair wage. Any substitute for this will fail. What the employer wants is efficient, permanent employees. If the living conditions in a community are such that the payment of fair wages alone will not secure decent living conditions for his employees, economy and justice make him responsible for improving them. In the large city an employer can secure conveniences for his workers by making the best transportation facilities available, having an information service in regard to available accommodations, and perhaps in forming a cooperative store, or facilitating the purchase of homes. His responsibility in the isolated community is greater and so, also are the dangers in the assumption of that responsibility. If the wages are adequate, the employer may soon withdraw his direct efforts, and let the people decide what they want and manage affairs as they think best.

A chapter is devoted to the discussion of insurance, savings, and loans, covering the topics of group sickness, life, fraternal, and accident insurance; the various carriers with their relative advantages and compensations. A discussion of health insurance as a possible approach to the question of sickness, is rather conspicuous by its absence. The question of old age in industry, its extent and causes, and the methods of providing old age insurance through annuities, pensions, and service pensions is outlined. Although it may be conceded that old age is

an industrial problem and industry should be compelled to bear the burden, the difficulties of the scheme seem to outweigh the advantages. Few industries have been willing or able to develop any satisfactory plans. Corporation pension systems provide only for the better class of mechanics and other well paid laborers, while the great mass of common day laborers is not touched. Any pension scheme for employees with one corporation as the unit is unsafe for the group covered if not large nor varied enough. The various investigations tend to show that adequate provision is not made by trade unions or fraternal societies. Insurance is designated by the authors as the means of meeting the situation, but whether that insurance should be compulsory for all adults, for certain groups, or voluntary; whether it should be carried by the state, private insurance companies, or mutual societies, or by all three in competition, is apparently a question for the future to decide. The problems are pointed out but the issues are not faced squarely in the light of future development.

The need for greater total and hourly output and the need for more leisure for recreation will always make efficiency in production a common goal for employer and employee. Labor administration should make industry more effective by making the workers more efficient, and the output for each hour of effort better in quality and greater in quantity. Before the installation of a new system of labor administration there should be a careful preliminary study and analysis of the situation and the approval and understanding of the workers should be gained. The organization and administration of the work itself should be in the hands of persons with technical training, as well as an appreciation of method and purpose. The spirit with which the work is inaugurated and continued, the earnestness of the desire in those who administer it to secure the fullest cooperation of the employees in solving these human problems of production, remain the chief factor in its success. Success awaits the extension of service activities in any industry, if employer and employee are bent only on securing through them increased effectiveness for each individual, and for the business as a whole. With such a concept the old paternalistic approach has no place. Service for the worker becomes solely and frankly a business proposition in which each employee from the president down is interested. The development of any single activity must be carefully considered, its introduction must be such as to promise maximum returns, and its development, administration, and control must bring increasing results.

D. K.

## INTERNATIONAL NOMENCLATURE

At the third session of the International Commission for the Decennial Revision of the Nosologic Nomenclature, held in Paris October 11 to 14, certain changes were endorsed in disease classifications. Class one, dealing with epidemic, endemic, and contagious diseases, was divided into two classes, (1) epidemic, endemic, and infectious diseases, and (2) other general diseases. To Class one were transferred, from diseases of the nervous system, the following diseases: acute poliomyelitis, epidemic cerebrospinal meningitis, and lethargic encephalitis. Under influenza a subdivision was made for diseases of glandular origin, and the diseases due to disturbances of nutrition were brought together.

The classification as it now stands contains fifteen classes, divided into 186 numbers, some of which are again subdivided. The new nomenclature can be had by writing to the League of Red Cross Societies, Geneva.

1. Frankel, Lee K., and Fleisher, Alexander: *The Human Factor in Industry*, Macmillan Company, New York, 1920



# INDUSTRIAL SURGERY AS A SPECIALTY\*

BY WILLIAM O'NEILL SHERMAN, M.D., CHIEF SURGEON, CARNEGIE STEEL COMPANY, PITTSBURGH, PA.

INDUSTRIAL surgery as a specialty has been a development of the past ten years. While surgeons and doctors have been associated with industrials for many years, they were never considered as an integral part of the organization of plant or works. The enactment of employers' liability legislations, together with a realization of the responsibility by progressive and humane employers, has brought about a demand in industry for surgeons who have shown their fitness and ability, not only as surgeons, but as executives who have a broad and liberal vision and grasp of the many problems common to the environment and needs of the respective industries. The delay in recognizing and including the surgeon in industrial organizations in the past was partially due to the lack of training and sympathy on the part of the medical profession. It was considered unethical and frowned upon by certain of the profession to be associated with an industrial institution in which the doctor was compensated by salary, though it has become obvious to those familiar with the subject that the only way a surgical or medical organization can be efficiently operated is on a salary basis, dependent upon the time spent and qualifications of the doctor.

## One Physician vs. Group Plan

The old plan of contract practice which is followed in certain communities today, in which the doctor, who employs underpaid assistants, is employed by being paid a fixed monthly rate for each employee, is to be condemned. There are certain local conditions, such as isolated mining communities, where this plan is the only practical and efficient one, but in such cases all the doctors should be paid salaries commensurate with their ability. The contracting, or directing doctor, is entitled only to his fair share of the earnings, and not to the lion's share of the collections. We recall incidents where the so-called contract doctor was collecting from twelve to twenty-five thousand dollars annually, paying his young assistants from \$100 to \$125 monthly. As the result of such a policy the employees as well as the doctors and employers were being cheated. In such isolated communities where it is necessary and expedient to organize by collecting a fixed sum from the employees, an attempt should be made to organize along the lines of the group system, something comparable to a modified Mayo clinic. This is being done in many parts of the country and has resulted most satisfactorily to employees, employers and doctors. Local conditions and environment must at all times be considered before proceeding with such an organization.

Much of industrial surgery has been more or less revolutionized as a result of the recent World War. Members are now saved from amputation and lives are saved that formerly would have been lost. The Carrell method of treating wounds and infections, the wax treatment of burns, the mobilization, *i. e.*, free exercise of muscles and joints, of fractures by means of Thomas splints, Jones splints, and Balkan frames, and the reconstruction surgery by means of plastic reconstructive operations, active and passive exercises, electricity and massage, are all applicable to industrial conditions and should be adopted

without further delay and absurd discussion. Many, many lives were needlessly sacrificed, and countless amputations and major operations could have been prevented, had there been some general policy tending to the immediate application of new and modern methods throughout the armies, until such time as better or more improved methods were available. It seems almost inevitable that any change in methods or treatment from the old orthodox methods is due for severe condemnation and criticism on the part of those who know nothing whatever about the subject and those who think they are infallibly wise. It is our duty to accept new ideas when they are conclusively proved. Every real advance meets with such violent opposition that as a result the public fails to gain the benefits of scientific discovery until years after the first introduction. We should not be gullible to everything that is being advocated; however, the unreasonable reactionaries are just as great a menace as the most ignorant.

Excluding certain conditions, there is no excuse today for the so-called infected cases. In the great majority of instances infection is due to carelessness or ignorance on the part of doctors or nurses. In well organized industrial services, infection is almost unknown. In this respect, the industrial surgeon has shown the way to the general surgeon. It is imperative that we use every possible resource to cure our patients within the shortest possible time, with the best possible functional result. Those who complain that certain dressings or apparatus take too much time to apply have no moral right in the medical profession if, in order to save themselves time, they are unwilling to give their patients the service they know to be the very best.

## Methods That Shorten Disability

Championier twenty-five years ago advocated the early mobilization, *i. e.*, free exercise of joints and muscles, in the treatment of fractures. His advice was unheeded until the onset of the war, but it is now generally conceded that early mobilization of joints in fractures and infected joints is vitally necessary if early functional result is to be expected. By putting into practice many of the treatments which were demonstrated to be of great value in the war we have been able greatly to shorten convalescence, to reduce the compensation and return the injured workman to his former employment with a saving of 30 to 65 per cent of the time formerly lost in such cases. It is obvious that we should keep uppermost in our minds the necessity of returning the injured to work at the earliest possible date with the least loss of function. Time lost from accidents is a loss to employer as well as employee.

Much can be learned by industrial surgeons by visiting hospitals and industrial organizations where up to date surgery and methods are being practised. Every method should be made to introduce new and improved methods.

The medical schools at Harvard and the University of Cincinnati, recognizing the importance of undergraduate instruction in industrial surgery, medicine, and hygiene, have within the past few years included in their curricula subjects bearing on these specialties. At best they can only give a brief course of instruction to undergraduates and efforts should be made by our medical schools to include jointly the subjects of industrial surgery, medi-

\*Read before the American Association of Industrial Physicians and Surgeons in joint session with the Health Section of the National Safety Council, Milwaukee, Wis., September 29, 1920.

cine, and hygiene. It makes no material difference.

The outbreak of the war found us totally unprepared from a military standpoint. We are just as much unprepared medically in industry. We should have a post-graduate course of instruction in some industrial center, such as Chicago or Pittsburgh, where the clinical material is ample for such teaching. There are many positions unfilled today because of the lack of properly trained industrial surgeons and executives.

The Department of Industry of the State of Pennsylvania has recognized the importance and value of joint meetings of industrial doctors and employers to discuss their many mutual problems. These conferences have been of much constructive value and have had a tendency to elevate standards throughout the state. The subjects discussed are germane to industry and are of a character seldom presented at medical meetings.

The recently organized Industrial Section of the American Medical Association has awakened the American College of Surgeons to a full realization of their position. In the near future, we can expect helpful suggestions and constructive recommendations which will be of undoubted value to the profession as a whole as well as to industry. It will have a tendency to elevate the standards and introduce into industry the highest professional talent, and ideals. The large employers of labor are only too eager to accept a constructive and helpful program if it can be conclusively proved to accrue to the advantage of the employee.

It is quite evident that we have only scratched the surface of industrial surgery, medicine, and hygiene. It is imperative that those engaged in this field equip themselves properly to render the very best of service to both employee and employer. On our ability to maintain the fundamental conditions of health in the workmen depends not only the health of a particular group, but in great measure the prevention of debility and proneness to disease in the people as a whole. Those of us who develop sufficient breadth and vision are going to fill a great need. Mechanical, chemical, civil, and electrical engineering have been wonderfully developed during the past fifty years. Human, or medical engineering, as applicable to industry, has been almost lost sight of and has only recently made its presence felt. The opportunities are great and it behooves us to keep pace with the public. Industrial surgery is certain to develop rapidly during the next decade, and we should at all times adjust ourselves to the scientific advances as they are applicable to our work.

Those engaged in this work who are interested chiefly from a monetary standpoint can expect little success and should withdraw and enter some other field. The successful industrial surgeon is the one who loves his work, who receives his chief reward from the satisfaction of work well done and who treats his patients as he himself would like to be treated were positions reversed. Always be frank, honest and sincere with your patients; don't forget that they, too, are human and not a piece of machinery. Such conduct on the part of the physician will gain their confidence, good will and cooperation, and will have a great tendency to bring the surgeon closer to the employer and employees.

### KANSAS CITY HAS NEW CLINIC

There has been established at St. Joseph Hospital, Kansas City, under the direction of Dr. J. D. Griffith, chief of the staff of the St. Joseph Hospital, a clinic for the treatment of all diseases. A staff of forty-two physicians will have charge of the clinic.

### FLAT FOOT AND EFFICIENCY

There is no more frequent cause for disability and consequent "lay off from duty" in the naval service afloat or ashore than so-called "flat feet," declared Dr. C. F. Painter, Lieutenant, Medical Corps, United States Naval Reserve Forces, in the July issue of the *United States Naval Medical Bulletin*. Some conclusions by Colonel Painter are of particular interest to industrial physicians, especially in the relation of fatigue to flat feet.

The element of fatigue induced by disproportionate amount of standing, declared Colonel Painter, is of more influence than that caused by exercise even to excess. In other words, the ability of a muscle to contract and do its duty under stress is much less when the fatigue comes from unremitting tension than when tension changes constantly, as in walking. It is for this reason that those who change from one sort of duty to another involving a change in the relative amounts of standing and walking and the character of the surfaces upon which the work is done are the ones who break down first under the stress. In civil life it is seen most among those who take up, for example, positions as clerks and are obliged to stand behind counters with comparatively little occasion or opportunity to walk and exercise their leg muscles. The same thing is true of cases seen in naval practice. Men come into the service from all sorts of occupations, are put to strenuous work on decks with small opportunity to get any continued exercise in the way of walking. They are set to drilling without any reference to previous conditions of occupation or training. The normal foot will, in the majority of cases, stand up even under such rapid shifts without showing any tendency to give way. The foot, however, which is not up to standard will not behave as well, and unless carefully handled may go on to a state of considerable disability. In this type of case faulty shoeing or any improper method of poising the body weight over the foot may be the determining factor in causing the symptoms.

After considering various forms and effects of flat feet, Colonel Painter speaks of the care and prevention of the disability as follows:

Much diversity of opinion has been expressed regarding the treatment of flat foot. It seems to me that under conditions where absolute control of the patient is possible there is rarely any necessity for apparatus treatment, and that a period of time under hospital supervision, which should not exceed that ungrudgingly allotted to a case of appendicitis or other major surgical procedures, should straighten out these cases. If proper precautions are observed in regard to muscle-training exercises afterwards, there should be but little liability to relapse. No complicated system of muscle training is required; merely an insistence upon the daily systematic performance of a simple group of exercises accompanied by hot and cold douching of the feet, and massage where it is possible to obtain it.

The cases where plates are necessary are those in which the condition has gone to adhesion formation and have had to be broken up forcibly, or where the conduct of the case cannot be absolutely supervised, or a reasonable amount of rest and attention given.

The following are the exercises which have been found sufficient to restore these cases to functional activity if faithfully followed:

1. Flex foot; extend foot; circumduct foot, alternately and in both directions.
2. Curl toes.
3. Feet parallel, roll up on outer borders.
4. Turn toes in, rise on toes.
5. Foot placed on floor. Keep ball of great toe and the heel on the floor and lift the inner border of foot as much as possible from the floor.
6. Resistive exercises for strengthening the peroneal and posterior tibial as well as the anterior tibial and gastrocnemius groups. The resistance may be manual or by means of spring balances, weight and pulley, or elastic resistance.

The exercises should be done twice per day, from fifteen to thirty or forty times each. After the exercises there should be a short period of hydrotherapy and massage. The exercises should be performed slowly.

# THE NATION'S HEALTH

## Public Health and Public Welfare, Administrative Medicine, Organized Health Service

C. E. A. WINSLOW, DR. P. H., *Editor*

### SALIENT POINTS IN THE YEAR'S RECORD

THE year 1920 was marked by no special epoch making advance in the field of public health; but steady and important progress has been made in several directions.

In the field of etiology Noguchi<sup>1</sup> has continued his studies of *Leptospira icteroides* and materially strengthened the hope that a serum may be developed for the treatment of yellow fever by the use of this organism. Wobach and his associates<sup>2</sup> have practically completed proof that *Rickettsia prowazekii*—as Da Rocha Lima believed—is a causative agent in typhus fever and have strengthened the hypothesis that another species of *Rickettsia* is the cause of trench fever.

There has been unusual activity in the tuberculosis sector. Krause's<sup>3</sup> remarkable series of essays have continued in the *American Review of Tuberculosis* and have materially helped to clarify the complex problems of immunity in this disease. From the statistical side Cummins<sup>4</sup> has furnished clear and convincing evidence of the rôle played by acquired immunity in determining the mortality from tuberculosis and its age incidence in various communities. Studies on chaulmoogra oil, and its constituents and their specific toxicity for the acid-fast group<sup>5</sup> are not only of primary importance in connection with leprosy but may prove of significance in connection with tuberculosis as well.

On the engineering side of public health no important advances have been made except the experiments at Sheffield, England, on the oxidation of sewage in the activated sludge process by agitation with paddles instead of by direct aëration with fresh air. If this method proves successful, it should materially reduce the cost of sewage treatment.

In the practical field of public health administration progress has been steady, but not spectacular. The general death rate for the Registration Area, which rose to 18 for the influenza year 1918, fell to the remarkably low level of 12.9 per 1,000 for 1919, while the tuberculosis death rate dropped to an equally notable minimum of 125.6 per 100,000. State reports indicate that 1920 will show a record nearly as good as, or better than 1919. How far this sharp fall in the death rate was due to a selective influence of the influenza epidemic, to the physical fitness produced by military training, to prohibition, or to prosperity, only future statistical studies will

determine. In any case, the result is gratifying. Two events of the year, however, serve to warn us of the necessity of constant vigilance. The fact that plague has gained a substantial foothold in several Texas seaports has caused a vigorous development of the anti-rat program in all our seaboard cities; while the typhoid epidemic at Salem, O., which reached its peak November 1 and comprised 763 cases by November 19, is a lesson as to the danger of underground contamination of gravity pipe lines which waterworks' engineers must take to heart, this epidemic having had its origin in a broken tile pipe through which the city got its water.

Among the most gratifying events of the year was the defeat of the two referendum proposals in California which would have prevented animal experimentation and practically eliminated effective school inspection throughout the state. The fight for these measures was conducted with ample funds and the most reckless appeals to prejudice. The final result is a triumph of American sanity.

The introduction of the New York State Health Center Law<sup>6</sup> was an event of outstanding importance in the field of sanitary statesmanship, even though the law failed of passage at the spring session. A New York city—Jamestown—has also made a most significant contribution to the sanitary and economic problems of milk supply by the establishment, after a long struggle, of a municipal plant for the pasteurization and distribution of milk.

In Europe, epidemics of typhus have continued to rage, in Poland and the Russian border states, with very limited success in large-scale control. The European nations are rapidly awakening, however, to the importance of public health problems and, particularly in Czecho-Slovakia, developments are to be anticipated in the near future.

The establishment of a Ministry of Health in Great Britain has been signalized by the publication of a notable report by Sir George Newman,<sup>7</sup> which formulates clearly and simply an inspiring program of public health development. On the continent the League of Red Cross Societies at Geneva has been organized for work under the direction of Dr. R. P. Strong, and its future service in the development of public health work in Europe, particularly along educational lines, should be an important one. The publication of the *International Journal of Public Health*, whose first numbers are admirably edited, and the establishment of an international school of nursing in London are two of the notable achievements of the League during the past year.

EDITOR.

1. Noguchi: Jour. Exp. Med., 1920, xxxii, pp. 381, 601, 627.

2. Wobach: Int. Jour. Pub. Health, 1920, i, 211.

3. Krause: Amer. Rev. Tub., 1920, iv, 551.

4. Cummins: Int. Jour. Pub. Health, 1920, i, 137.

5. See, particularly, Walker and Sweeney, Jour. Inf. Dis., 1920, xxvi, p. 238.

6. New York State Health Center Law, Mod. Med., 1920, ii, 276.

7. Newman, Sir George: An Outline of the Practice of Preventive Medicine. A Memorandum addressed to the Minister of Health, London, H. M. Sta. Off., 1919.

## MINISTRY OF HEALTH REPORT

THE first annual report of the British Ministry of Health is a very noteworthy document. It simply teems with information, mainly from the standpoint of preventive medicine, as to the health situation in England and Wales.

As only parts of it can be commented on in a brief letter, those will be chosen which appear most likely to interest the readers of MODERN MEDICINE.

It may be as well to state that the report is written under the direction of Sir George Newman, chief Medical Adviser of the Ministry, who contributes an introduction. In the introduction the following definition is given of the duties, functions, and powers of the Ministry. It is described as a new central authority created for the purpose of supervising the health of the people as a whole, and for unifying and simplifying the central agencies working in this behalf. It has taken over existing medical powers and functions, particularly the work of the Local Government Board, and the English and Welsh Insurance Commissions as well as that of the Registrar General. Certain subsidiary public health functions of other departments have also been incorporated, viz., the Board of Control and certain medical duties or responsibilities of the Board of Education, Home Office and Privy Council, with the object not merely of collecting these Agencies from various offices and concentrating them into one, but of welding them together and giving them such new orientation as shall be conducive to the health of the people as a whole.

It is a question of new relationship, focus, and outlook, as well as of collection together; in short, it is a national scheme of preventive medicine, and one that has never been attempted on so vast a scale in any country.

In reviewing the health of the British people, it is pointed out that it has been customary in this country to give chief consideration to changes in population, to the birth and death rates, and to the incidence of infectious diseases. In addition to these categories there must be also included an estimate of general sickness, invalidity, and disablement. The population of England and Wales in 1919, was 36,800,000. The number of births recorded in 1919 was 692,438, including 41,283 illegitimate, yielding a birth rate of 18.5 per 1,000 of the population. In 1903 there were 948,271 births; thus yielding for 1919 was 250,000 less than this highest figure. On the other hand, there were in 1919, in England and Wales, 504,203 deaths, or the equivalent of a death rate of 13.8 per 1,000. The trend of the death rate is steadily downwards, and the decline has taken place at all ages. As regards infant mortality, during the first twenty years of the present century there has been a remarkable fall in the total infant mortality, and recently also in diarrheal diseases. In fact, the decline has been in diarrheal and respiratory diseases, rather than in all causes of death under the age of three months. In England and Wales it may be noted that the incidence of infant mortality falls chiefly in the first three months, and in the first week of the first three months; that it is higher in urban than rural areas; higher in the North than the South; that it is higher among illegitimate children; that its incidence is dependent not upon density of population, but upon local and domestic conditions, characteristic of limited industrial areas, or social classes of the community; that it is high among the poor, and low among a better social class; that the three chief causes of death in infancy are developmental conditions, immaturity, prematurity, debility, diarrheal disease, and respiratory disease; that

since 1901-1910 there has been a significant decline affecting the whole of the first year, but particularly in regard to deaths due to diarrheal disease, then to respiratory disease, and only much less so in respect to developmental disease. Speaking generally, it may be said that the developmental conditions cause about 30 per cent, and the respiratory, diarrheal and other infective conditions, about 40 per cent of the total infant deaths. The number of still-births notified in 1918 was 19,757, or approximately 3 per cent of the live births. The mortality of illegitimately born infants is principally due to death on the first day, syphilis or to maternal ill health and to neglect leading to diarrhea, prematurity, and atrophy.

It is obvious that the health of the mother and child is the primary and essential step to be taken to insure or rather to safeguard the health of a nation. The Ministry of Health fully recognizes the importance of the matter, and among the measures taken in this direction is a scheme of maternity and child welfare which has now been inaugurated in every county and county-borough, and in many of the larger urban districts. In many areas, the midwifery service is being reorganized and brought into closer association with other forms of maternity and infant health service.

Attention is drawn to the fact that the physical care of maternity, infancy, and childhood is now—for the first time—supervised by one department of State, and the result should be a single, unified, and continuous supervision from birth upwards.

As said before, the report is a perfect mine of valuable information regarding the health conditions of England and Wales, and also of some of the means proposed to prevent disease.

It may be argued, and perhaps rightly to some extent, that the schemes sketched in the report are too ambitious and idealistic, but it is best to aim high; and idealism in this material age is a rift in the clouds that obscure the light of progress.

In any event, the report itself gives such an excellent bird's eye view of the English people and of other matters relating to preventive medicine, that it is a document which no one interested in such matters should pass by.

LONDON CORRESPONDENT.

## COLORADO PSYCHOPATHIC HOSPITAL

As a result of the recent election, Colorado is assured of a psychopathic hospital and of sufficient funds to erect and maintain it. There will be provided a laboratory as well as a hospital and such service as will assure that the "curable insane" will be cared for. The success of this measure is the result of a well organized campaign following very closely the suggestions of the National Committee on Mental Hygiene. It was impressed upon the people, states the *Journal-Lancet*, that the main object of the state and of the individual should be the prevention of insanity. The intelligent interest of the public was aroused by propaganda as to the urgency of the problem. The importance of prompt care and treatment of incipient cases was brought out, the duty of the state to these unfortunates was emphasized, and the public was made acquainted with the appropriation of funds necessary for the project. The whole proceeding stands out as an example of what may be accomplished by intelligently organized effort.

I consider the establishment of health and right living habits as being the most important factor in education.—Dr. P. H. Claxton.

# VENEREAL DISEASES—PHYSICIAN'S RESPONSIBILITY FOR THEIR CONTROL

By MILLARD KNOWLTON, M.D., C.P.H., REGIONAL CONSULTANT, UNITED STATES PUBLIC HEALTH SERVICE, NORTH CAROLINA STATE BOARD OF HEALTH, RALEIGH, N. C.

A SENSE of public responsibility for the venereal disease problem is one of the by-products of the war. When faced with the necessity for utilizing the manpower of the nation to the limit in combat with a first class military power, America soon recognized venereal disease as the most serious communicable disease menace to its military strength. Medical men have not forgotten that 5.4 per cent of the second million men called to arms had venereal disease when they reached camp. Thus the war brought the venereal disease problem to the front as a public problem.

Even in war time the venereal disease problem is essentially and fundamentally a civilian health problem. Five out of six of the soldiers suffering from venereal diseases were infected before enlistment. The others became infected by contact with the civilian population. Adequate preparation for the defense of the nation against future aggression requires careful attention to the venereal disease problem by the civilian communities. Any problem so closely related to the defense of the nation is a public problem.

## A Menace to Present and Future

Inasmuch as gonorrhea is looked upon as the greatest sterilizer, and syphilis as the greatest abortifacient, it behooves the people to take measures against the ravages of these diseases in order to maintain a birth rate that will give the best assurance for the future of the nation. An excess of births over deaths is necessary if a nation is to grow strong. France is now suffering because of a low birth rate. Any factor that affects the birth rate as does venereal disease is a vital public problem.

During the war it was found that in a large munition plant employing 10,000 workmen, 68 per cent of the workers on the non-effective list each day were listed because of venereal diseases. Production among those so infected was found to be 33 per cent below normal. Facilities for treatment were provided and 2,000 employees were treated during the year. Every man's output returned to normal after treatment was concluded and the man returned to health. The company estimated that the work was worth at least \$150,000 per year in increased production. At this time of high prices whatever tends to retard production is a public problem.

## Potent Factor in Dependency

Another factor of immediate public concern because it involves the expenditure of public funds is the relation of venereal disease to dependency and defectiveness. How much of the state and local expenditures for the care and maintenance of dependents and defectives have been made necessary by venereal disease cannot be said. That such expenditure is far beyond the cost of prevention must be apparent to anyone who will give the matter a second thought. Indeed, when we consider the public charges in the alms houses and other institutions whose lameness, epilepsy, blindness, feeble-mindedness, insanity, or other cause of dependency is due to venereal disease, we may well believe that the state would profit by taking measures to prevent these diseases, as did the munition plant, by

providing treatment for infected persons. Thus it appears that when viewed from any angle the venereal disease problem is a public problem. Even from a clinical point of view, pay for the treatment of such diseases among indigents must come from the public purse.

## Remedy to Be Applied at Source

Owing to the complicated and intricate character of the venereal disease problem, the remedy has not been one of easy attainment. Experience has led to the direction of the campaign against venereal diseases along three general lines:

(1) Educational measures for the dissemination of information are regarded as fundamental for any kind of advancement under a popular form of government.

(2) It is now almost universally recognized that effective measures against venereal disease will include the repression of prostitution, which is the great source of infection. Prostitution is no longer to be regarded as a fixed part of the social structure or even as a "necessary" evil. As a commercialized institution its doom is sealed. The public will not permit a return to the old conditions.

(3) That part of the attack against venereal disease which is of most interest to physicians is treatment. It is by proper treatment that infected persons are rendered non-infectious. Thus treatment is a matter of public concern and the physician who properly treats a case of venereal disease performs an important public service.

So much by way of introduction. I wish to use the rest of the time allotted to this paper in a discussion of the problem of treatment. I have no information or suggestions to offer concerning the methods of treatment. I wish merely to make a plea for better treatment, and to suggest a plan whereby I believe that better treatment may be provided for patients in remote communities.

## The Physician's Responsibility

No one but a physician is qualified to treat venereal disease properly. This is one branch of the healing art in which physicians have a monopoly. The osteopath, the chiropractor, and the Christian Scientist are constrained to withdraw from the field and leave the medical man in full control. This monopoly presupposes a responsibility and it is for a keener sense of responsibility and a better preparation for the discharge of their full duties that I now wish to plead with physicians.

Medical men are disposed to take venereal diseases somewhat more seriously than formerly, but many physicians still do not care to treat such cases. To be sure, there are unpleasant features about this kind of work; but the physician's responsibility cannot be fully discharged by giving indifferent or careless treatment. The physician owes it to both his patient and the public to see that the best possible treatment is given.

All physicians will agree that patients should not attempt to treat themselves and should not rely upon drugstore treatment or treatment by quackery. In propaganda designed to turn patients away from self-treatment, the counter prescriber, and the quack, it is constantly urged that proper treatment can be given only by a quali-

fied physician who can examine the patient carefully in order to determine what treatment is needed. Sometimes the busy doctor makes an unfavorable impression upon the patient by failure to live up to our promises concerning a careful examination. A case in point is that of a North Carolina woman who was infected with gonorrhea by her husband upon his return from the Army. Before treatment was completed it became necessary for her to move to another city where she sought to continue treatment under a physician's care. Her experiences in that connection are given in the following extracts from a letter recently received in our office:

I have tried three doctors, and the one who was most recommended, Dr. ———, merely asked me what treatment the doctor in ——— had given me, and told me to continue that treatment. He did not say for how long, nor did he offer to make an examination. According to your pamphlet and letter such indifferent advice is unsatisfactory. This doctor did not even ask me to come to see him again. He acted as if he were wholly incompetent to give advice in this case. . . . I am very much concerned about my condition and I want to be helped. I have already spent a large sum of money for medicines, doctors advice, etc., and a great deal of time in treating myself, and I think I am entitled to some results for my outlay of time and money. Why cannot the law require doctors to be more competent? I think any doctor as negligent as the one I have mentioned should be reportable by the patient. A case like this is too serious for a doctor to be careless about.

The foregoing statement by a woman of education and refinement merits serious consideration by physicians. If the medical profession is to maintain its prestige with the people and continue to enjoy the fullest public confidence, it is highly important that physicians meet the increasing demands of a more fully educated public.

In meeting these requirements only two courses are open to a physician when a venereal disease patient applies for treatment. These are either to give the best possible treatment himself or refer the patient to a physician who will give the best possible treatment according to modern methods. Remembering that each uncured case of venereal disease is a source of danger to others, the physician can perform his full duty to himself, his patient, and the public only by pursuing one or the other of these courses.

The public interest requires that all patients suffering from venereal disease be properly treated no matter what their race, color, or social position may be. Venereal diseases, like other communicable diseases, know no racial boundaries. Where different races of mankind are intermingled it is to the interest of each race, as a matter of racial self-preservation if from no higher motive, to have venereal diseases properly treated in members of the other race. Physicians have it within their power to see that proper treatment is given to all sufferers from venereal disease.

I am not asking physicians to work without remuneration. Most venereal patients can afford to pay at least a reasonable fee for treatment. In the few instances where a person suffering from venereal disease in communicable form is really indigent, it is simply a matter of self-protection for a community to provide treatment at public expense. State Boards of Health will provide arsphenamine free for the treatment of indigent syphilitics who are infectious, provided the community or a big-hearted doctor will see that the drug is properly administered. In the larger communities the most convenient way of providing treatment at public expense is by means of clinics. In the smaller communities some modification of the clinic arrangement may be necessary.

Each physician is urged either to give the best possible

treatment or to refer his cases. The question may be asked, to whom the cases may be referred. It is realized, of course, that only the larger cities can support specialists. In rural states where only a small percentage of its population live in or near the larger cities, to the end that rural medical service may be improved, it is proposed that the medical men of each community provide at least partial specialization in medical service to that community. This will be possible through concerted action. As a first step, let the physicians in each county get together, talk over the proposition and select from their number one who is willing to make special preparation by study and equipment for the proper treatment of venereal diseases. Of course, he cannot hope to limit his practice to this line in a small community, but by partial specialization he can become an authority on the matter for his own community to whom patients may be referred or who may be called in consultation in difficult cases. The man who thus qualifies himself for the better treatment of venereal diseases should be selected by the board of county commissioners to treat indigent patients. He should be recognized by the medical profession of the community in such measure as to make worth while his expenditures in time and money for special training and equipment.

### Partial Specialization Proposed

The plan here proposed would result in advantage to both the medical profession and the public. Thus it would accord with a principle that is now happily appearing more clearly in the vision of far seeing medical men. This principle is that the ultimate interests of the medical profession are parallel to the best interests of the public in medical matters. While recognizing the fact that public interests are paramount to those of any class or group, medical men will do well to remember that the doctor serves himself best by serving others.

The gist of the whole matter is that the level of medical practice with respect to the treatment of venereal diseases should be raised to as high a point as possible in all communities of the state. This requires specialization which comes as a natural process in larger communities. In smaller communities the same end can be reached, in lesser degree perhaps, by a process of partial specialization encouraged and stimulated by the medical profession. It falls to the lot of medical men to prevent the spread of venereal diseases by the proper treatment of existing cases. For the best results, united and cooperative efforts for encouraging specialization are required.

The matter is placed in the hands of the medical men in full confidence that they will rise to the opportunity for public service and take active measures to provide better treatment for venereal disease cases in all parts of the country. Let me urge again that united effort and cooperation are necessary. If we doctors do not hang together, the public may give us a chance to hang separately.

### MORE DENTAL CLINICS NEEDED

Though the Department of Health of New York City maintains eight dental clinics, more are needed, according to their recent report. The Bureau of Child Hygiene has concentrated its activity largely upon preventive dental work as far as possible.

The personnel of these clinics consists of one supervising dentist, nine dentists and eight nurses. The supervising dentist and dentists are part time officers, serving approximately three and one-half hours daily, from 9 a. m. to 12:30 p. m. The nurse is a full-time employee, with hours from 9 a. m. to 4:30 p. m.



## GROUP CONSULTATION CLINIC

By EDMUND C. BODDY, M.D., State Department of Health, Albany, N. Y.

FULLY aware of the difficulties under which the practitioners in the less thickly settled communities are working because of their inability to secure the aids rendered by well equipped diagnostic laboratories, x-ray plants, and other opportunities for consultation with men of special training along diagnostic lines for their difficult or obscure cases, the New York State Department of Health, in cooperation with the State Department of Education, the State Hospital Commission, the State Commission for Mental Defectives, the State Charities Aid Association, and the American Red Cross, have placed in operation a plan whereby a very material aid may be rendered to the medical practitioners in the rural sections of New York state through the Group Consultation Clinic. This group of medical consultants is so constituted as to cover practically the whole field of the practice of medicine and surgery. It consists of a Division of Pediatrics, a Division of Orthopedic Surgery, a Division of Diseases of the Chest, a Division of Diseases of Adult Life, a Division of Neurology and Psychiatry, a Division of Mental Defectives, a Division of Surgery and Gynecology, a Venereal Disease Division, and a Division of Oral Surgery together with a well equipped field diagnostic laboratory and an x-ray department. These various divisions are represented by thoroughly trained medical men who so cooperate in their examination of patients that patients admitted to the clinic may be referred from one division to another as their condition may indicate and an expression of an opinion as to the diagnosis may be obtained from each division, together with whatever laboratory and x-ray examinations may be necessary to complete the diagnosis. The clinic accepts only those patients for examination who are referred by physicians. It has been found that a greater degree of service can be rendered and the cooperation of the physician assured, if this plan is rigidly observed. As the clinic is being conducted at the present time it not only confines its services to those patients who are referred by physicians but has done away with preclinic publicity, thus still further limiting the numbers who might be attracted by publicity and importune their physicians for cards of admission.

### Modus Operandi

The territory covered by the clinic has been an entire county and, under the direction of a supervising nurse, every practising physician has been visited by clinic nurses and invited to refer to the clinic all patients on whose case he may desire a consultation. The nurse further offers her services in calling on the patient, arranging for specimens to be submitted to the laboratory, the Laboratory Division being sent on, prepared to do work a week or ten days before the opening of the clinic. The transportation of the patient to the clinic is arranged for by the nurse, who also cheerfully performs any other service that the attending physician may request. No patient is ever visited by the nurse except with the consent of the attending physician.

The director of the clinic also calls on the physicians, explaining the object and scope of the work. He presents the physician with blank history sheets, requesting him to prepare a history of the cases on which he may wish consultation, setting forth any unusual conditions that they may present, and inviting him to make use of the laboratory and x-ray service as the needs of his practice may demand. These history sheets, together with the

request for laboratory work, etc., are collected by the nurse at the time of her visit or brought in by the physician himself at the time the patients present themselves for examination. The family physician is invited and urged to accompany his patients to the clinic and to be present and confer with the various consultants at the time of examination of their patients, when the case can be talked over and discussed by the attending physician and consultants together.

### Emphasize Unusual Cases

In the evening following the clinic a meeting of the clinic consultants and the attending physicians is arranged for, at which time the more interesting and unusual cases are taken up and discussed, the family physician presenting the history of the case and outlining the course up to the time the patient was admitted to the clinic, and the various consultants who have seen the case reviewing their findings, with the addition of any necessary information brought out by their examination or the laboratory reports.

After the consultant in the original division to which the patient was at first admitted has reviewed the opinions of the consultants in the various other divisions to which the patient may have been referred and has had a report from the diagnostic laboratory on specimens submitted or an interpretation of an x-ray plate, he makes up the clinic findings, or impressions, or a diagnosis; when these, together with the history of the patient, have been recorded, a complete report is sent to the physician who referred the patient, including the recommendations of the consultants as to further study or treatment of the case; thus the same professional ethical relation is observed as maintains between physician and consultant in ordinary practice.

We append a statement of the number of patients examined and referred to the different divisions at the recent clinic held in Walton, N. Y.

PRELIMINARY REPORT  
of  
DELAWARE COUNTY CLINIC  
Walton High School, Walton, N. Y. November 11-12, 1920.

	Original Examinations	Referred from Other Divisions
Diseases of Adult Life.....	20	13
Diseases of Chest.....	8	1
Orthopedic Surgery.....	17	1
Gynecology and Surgery.....	7	15
Neurology and Psychiatry.....	4	6
Venereal Diseases.....	2	20
Mental Defectives.....	1	0
Pediatrics.....	7	1
X-Ray Division.....	6	46
Laboratory.....	30 (Patients)	69 (Exams.)
Total Original Examinations.....	71	
Total Consultations (Referred from other Divisions).....	133	

EDMUND C. BODDY, M.D.,  
Director of Clinic.

### Roster of Consultants

Below is given the Roster of Consultants who attended the Group Consultation Clinic, for Delaware County, held at Walton High School, Walton, N. Y., Nov. 11-12, 1920.

*Pediatrics.*—Dr. H. L. K. Shaw, clinical professor of diseases of children, Medical College; president American Child Hygiene Association; and Dr. Edith Michaels, supervisor of Child Hygiene Center, New York State Department of Health.

*Orthopedic Surgery.*—Dr. Leroy W. Hubbard, orthopedic surgeon, State Department of Health.

*Diseases of Chest.*—Dr. Malcolm F. Lent, director, Division of Tuberculosis, New York State Department of Health; and Dr. Frank MacSorley, supervisor, Tubercu-

losis Hospitals, New York State Department of Health.

*Diseases of Chest.*—Dr. Joseph P. O'Brien, instructor clinical medicine, Albany Medical College.

*Diseases of Adult Life.*—Dr. L. W. Gorham, clinical professor of medicine, Albany Medical College; and Dr. Henry Viets, Albany Hospital, Albany, N. Y.

*Neurology and Psychiatry.*—Dr. Mary F. Brew, assistant physician, Binghamton State Hospital.

*Mental Defectives.*—Dr. Earl W. Fuller, psychiatrist, Rome State Custodial Asylum.

*Surgery and Gynecology.*—Dr. Arthur Stein, clinical professor of surgery, Albany Medical College.

*Veneral Diseases.*—Dr. Edward H. Marsh, consultant, Bureau of Venereal Diseases, New York State Department of Health.

*Diagnostic Laboratory.*—F. Constance Stewart, bacteriologist, State Laboratory; and Francis Constable, laboratory assistant, State Laboratory Division.

*X-Ray Department.*—Dr. William P. Howard, assistant attending orthopedist and radiographer, Albany Hospital.

## PUTTING THE EX-CONSUMPTIVE BACK ON THE JOB

By GODIAS J. DROLET, MANAGING EDITOR, BULLETIN NEW YORK TUBERCULOSIS ASSOCIATION, INC.  
NEW YORK CITY.

THE all too frequent recurrence of tuberculosis, among those whose disease has been apparently arrested by sanatorium or other treatment, has long been a problem calling for solution. The commonest cause of such relapses has been the return from ideal sanatorium life to the same unfavorable working and living conditions under which the disease first started. The sudden change from absolute rest to a full day's work—without a hardening process—is almost equally dangerous. The situation must be met by the gradual utilization of occupational therapy and vocational training, at the sanatorium in the country, followed in town by industrial rehabilitation at a sanitary workshop and by improvement of home conditions.

The Federal Board for Vocational Education, having a large number of ex-service men suffering and recovering from tuberculosis, and recognizing the above facts, proposed to the National Tuberculosis Association and the New York Tuberculosis Association that a workshop for such industrial rehabilitation be established in New York City.

### Model Workshop Established

The New York Tuberculosis Association, after preliminary investigation of suitable trades and the best location,



Students in watch repair department of the Reco Manufacturing Company, the model workshop established by the New York Tuberculosis Association.

opened on June 15, 1920, a model workshop in Long Island City for the training, under ideal sanitary conditions, of arrested cases of tuberculosis. It is incorporated under the name of the Reco Manufacturing Company, and is

under the direction of an active committee of public spirited business men, headed by Mr. Fred M. Stein, who established some years ago the Altro Shop, the first successful workshop of this kind for the needlework trades.

The shop has now been running five months. It is situated in the newly developed manufacturing section of Long Island City, in the Borough of Queens. The building is new, has light and air on all sides, is up to date in every respect, and is within five minutes walk of the subway from Manhattan. The plant is on the third and highest floor of the building. The workrooms have large windows on all sides and there is a maximum of air and sunlight for its occupants. The shop is equipped with hygienic and sanitary fixtures. Here the handicapped worker may gradually be trained to a trade and be conditioned to resume regular work.

### Admission Requirements

At present only men with arrested or quiescent tuberculosis and negative sputum are received by the Reco Manufacturing Company. The men now under training are largely ex-service men, but civilians who are suitable patients and anxious to take up any of these trades will be accepted if they are prepared to spend the full period of apprenticeship. They should apply or be referred to the Manhattan Office, at 10 East Thirty-ninth Street, at 9 a. m., daily, except Sunday. Properly qualified visitors are always welcome and arrangements for such visits will be made on request.

### Medical and Social Supervision

All applicants are subjected to a thorough medical examination before admission. Close and exhaustive histories of each patient are taken and the effects of the work carefully noted; but, it is a workshop and not a sanatorium, rest camp or health school. Care is taken that the medical and social work, while thorough, is not obtrusive. All examinations are made in Manhattan at the offices of the New York Tuberculosis Association. After a man is admitted to the shop and has started training, he is re-examined at the end of the first week and later once a month to determine the effects of the work. If his condition is at all questionable he returns oftener. In case of a relapse, men are returned to the sanatoriums or hospitals for proper care. Close supervision is kept of all men under training by means of these periodic examinations, and also by the trained nurse, who is at the shop several hours daily and takes temperature and weight of each man weekly.

The amount of work that each man is first allowed to do, as well as any increase of it, are specifically prescribed by the medical officer. A first aid kit is kept at hand;



the nurse's room has a couch and emergency facilities in case of need.

It is intended that the shop be like any other well conducted factory, with the added fundamentals of teaching non-injurious, well paying trades, by part or full time training under strict medical supervision, and under the best obtainable hygienic surroundings. A cafeteria lunch-room has been installed and nourishing meals are served at cost. A rest room is provided on the roof, pro-



The jewelry class of the Rees Manufacturing Company. This is a workshop and not a sanatorium, rest camp, or health school. The medical and social work, while thorough, is never obtrusive.

tected and furnished with reclining chairs, tables and reading matter. The men are encouraged to rest after their lunch and work periods.

The home conditions of the men receive equal attention. Much of the good work may be undone at the home, where bad conditions beyond the patient's capacity to remedy may be present. A trained social worker investigates and visits regularly the home of each man. The benefit of her experience and advice is freely given; the best use of the rooms and resources available are pointed out. Family cares and worries are cheerfully shared; children in need of building up are cared for; the advice of the physician is emphasized and followed up.

### Trades Taught

The trades selected to be taught at the shop are watch repairing, jewelry manufacturing and cabinet making; these were chosen only after careful investigation. They are deemed most desirable because not injurious to the lungs nor especially fatiguing. Workmen in these trades are very well paid and there is a great demand for men skilled in these particular occupations. The instruction is carried out by experienced men who are experts in their respective trades. According to conservative experience, the present wages men may earn in these trades are from forty to seventy-five dollars a week.

When the students in the shop have gained enough skill to do marketable work they are paid wages on a piece-work basis. The skill that some of the men have developed has been surprising; without any previous mechanical experience, some have become proficient enough to make saleable articles within two and a half months on only part time training.

### Ideals in View

It is the intention to make the city model workshop the last step in the training and treatment of the tuber-

culous. Schools for pre-vocational training in certain sanatoriums (Loomis, Otisville and Gaylord Farm) are conducted by the New York Tuberculosis Association, where preliminary instruction is given to the sanatorium patient and he is prepared for transfer to the workshop as soon as his physical condition warrants. In this way the harmful gap of uncertainty following discharge is bridged. A record of his work at the sanatorium is kept and forwarded to the workshop. This pre-vocational training decreases the amount of time a patient will have to stay in the sanatorium, through the curative effect that it will have on his disease, provided he is interested in the trade. It also shortens his time at the shop because he enters with a grounding in his trade, experience with the special tools required, and is therefore ready for advanced instruction and will begin receiving wages all the sooner.

It is the aim gradually to increase the working hours of the man with arrested tuberculosis until he can do a full day's work; to teach him a well paid trade, keeping him all the while under medical observation until his ability and physical condition warrant discharge; finally, to find him a suitable position. Thus trained, hardened and re-established in life, his chances of again falling a victim to tuberculosis will be minimized, and he can take his place in the community as a healthy, self-respecting, self-supporting citizen.

### Christmas Seals Support Workshop

While the enterprise will eventually be self-supporting through the sale of manufactured articles, and while the tuition fees from the Federal Board of Vocational Education give some support, yet the initial cost and overhead charges have been and will be considerable. These are borne by the New York Tuberculosis Association, which in turn is supported by the Annual Christmas Seal Campaign.



The cabinet making department of the model workshop. The shop is like any other well conducted factory with the added fundamentals of teaching non-injurious, well paying trades.

### PHYSICAL EXAMINATION OF SERVICE MEN

The Rochester, Minn., local post of the American Legion at a recent meeting unanimously favored a plan for the semi-annual examination of former service men in order to keep them physically fit. The plan recommends itself for general adoption in the Legion. The *Journal-Lancet*, in commenting upon the matter, suggests that physicians outside the Legion will do the work free.

## CLEVELAND HOSPITAL AND HEALTH SURVEY

A popular summary is in our hands of the Cleveland Hospital and Health Survey which was made under the direction of Dr. Haven Emerson. Under ten subdivisions the results are brought together in an effort to formulate a practical working program for extension of health work in Cleveland.

Cleveland has been outstanding in her progressive attitude toward community responsibilities and health matters, and that so many deficiencies are emphasized in the report may well be taken as indicative of a like condition in other parts of the country. The territory is too large, according to the report, for the Bureau of Communicable Diseases to oversee properly. The \$7,000 a year spent on vital statistics is wasted because of lack of leadership. A city medical examiner is recommended to replace the office of coroner with its political connections. Provisions for crippled children are lamentably inadequate, and special attention is called to the startling fact that more deaths in Ohio are due to heart disease than to any other single cause.

The weakest spot in the school medical plan of Cleveland seems to be in the lack of supervision. A need is expressed for a standardized hygiene outline and for the bringing together of the Department of Physical Training and the Department of Medical Inspection which, oddly enough, are at the present time absolutely unrelated.

Cleveland is admirably equipped with legislation for the prevention of tuberculosis. It is pointed out that the factories should do more in detecting tuberculosis in its early stages and that the need of more nurses is evident.

Provision for mental patients is adjudged the poorest in the United States, their care being more a matter of law than of medicine. The remedy lies first in an improvement of archaic laws. The best work being done in this field is that being undertaken by the Bureau of Juvenile Research.

In the field of industrial medical service, emphasis is placed upon the need of standardization and a remedy for the deplorable scarcity of records in factories. Especially is the need felt in Cleveland for an industrial hospital, or for such reservation in other hospitals for emergencies as will take care of urgent cases which now must be taken to one hospital after another before room can be found for them.

It is mentioned that the status of women in mercantile establishments in Cleveland is of the highest order.

Of the children of Cleveland of seventeen years of age 75 per cent are already at work and many have been working for two or three years, their passage into industry being made without special guidance. The difficulties of supervision are indicated by the fact that each truant officer in Cleveland has 10,000 children under his supervision.

Cleveland leads in her public health nursing, thanks to her unique Central Committee on Public Nursing. No other city has ventured to adopt a generalized municipal system. Thirty-six plants in Cleveland provide industrial nursing.

The hospitals and dispensaries of Cleveland enable the care of only 10 per cent of the 20,000 people who are ill at any one time, an average far below that of other large cities. Recommendations are made in regard to the government and staffing of hospitals.

The problem of transporting patients to hospitals has received almost no attention in Cleveland. Part of the inadequacy of hospitals may be charged to the fact that

no institutional accommodation is provided for convalescents and 87½ per cent of the patients who leave the hospitals go home to unfavorable surroundings. The hospitals and dispensaries of Cleveland were "planted, not planned. Each has grown without any relation to the other and the time has come when a community plan should be realized, so that the present neglect in the care of children, and of eye, ear and nose diseases will be impossible."

Special commendation is given to the good work accomplished by the Cleveland Hospital Council, and an encouraging note is sounded in the clarity of vision of the spirit of cooperation evinced in the principal investigation.

## THE WHOLE STORY OF ONE EPIDEMIC

Those who read the brief dispatches from Salem, O., which were carried in nearly every newspaper in America, noticed wearily that some hundreds of people were suffering from typhoid fever and that in the course of a couple of weeks fifty of them died. Then came later bulletins that the city of 12,000 in eastern Ohio, a busy little manufacturing town, just out of the district of the great Mahoning Valley steel mills and right upon the edge of the coal fields, was recovering from the epidemic that multiplied the monthly death rate by three and reduced to danger of death one person in every ten.

The small news had but little portion of day to day interest and was dismissed as one of the incidents of national life. Few people asked themselves what it cost or the cost of prevention of such epidemics. For the benefit of Salem, O., and countless other Salems all over the United States, some larger and some smaller than the little city in eastern Ohio, the Ohio Department of Health has furnished figures on what the epidemic did to the common purse.

It took the amount of the average income of upwards of five hundred men in peace time. It took four times what the city collects in taxes for all purposes in a year, and it took away at one swoop nearly 4 per cent of the property of the city, all this in addition to the loss in suffering, in tears and in grief. The losses here given are calculated as cold economic losses, without sentiment of any kind.

State appropriation .....	\$ 5,000
Red Cross appropriation.....	50,000
Municipal appropriation.....	15,000
Private expenditure (including medical service and drugs, 850 cases at \$50 each).....	42,500
Private expenditure—nursing service, 200 cases at \$100 each.....	20,000
Loss of time by wage earners (one-third of cases, weeks each, at \$5 per day).....	60,000
Funeral expenses, 50 deaths at \$150 each.....	7,500
Value of lives lost, employing the basis of an average of \$4,000 for each one.....	200,000
Business losses (due to lowered earning power and to avoidance of city by persons from outside) estimated at.....	50,000
Total .....	\$450,000

The infection came from a broken tile pipe through which the city got its water. It was laid before there was state regulation of waterworks systems. In putting down this tile pipe, instead of iron pipe, the city made a saving of \$1,500. It had another saving in that it had spent nothing for bacteriological supervision of water supply, which would have cost \$1,000 for each year. The total saving of \$2,500 is counted against the loss of \$450,000 as calculated by the Board of Health experts. The matter is reported as a concrete illustration of the value of such "economies."

# THE RELATIONS OF PHYSICAL PROPORTIONS TO GENERAL HEALTH

BY G. J. WARNSHUIS, M.D., MARMARTH, N. D.

THESE observations were made some time ago but as the series is rather small it is with considerable hesitation that the inferences drawn are cited as definite conclusions. Nevertheless, they are so much in accord with subsequent general experience that we may confidently assert that further tabulations will bear them out. This report is presented, therefore, not with the hope that it will be accepted without dispute but in order that these conclusions may at least act as suggestions for further investigations.

## Evidence of Constitutional Inferiority

In the formal physical examinations required by insurance companies and other corporations it has always been customary to record the chest and abdominal measurements of the subject as well as the height and weight. Outside of the knowledge this procedure affords of the general state of nutrition, the question arises whether such data have any other significance in indicating the state of health of the individual or if any other measurements might be of equal if not greater importance.

Authors on the subject of physical diagnosis are given to repeating that a long waist is an evidence of constitutional inferiority and different methods of measurement have been invented for describing this proportion, although why or how this conclusion was reached has never been elucidated. Having a rather long waist myself, which has never given me any particular trouble except for the annoyance of being constantly on the guard to keep a proper length of shirt-tail within my trousers, caused me to feel a natural skepticism toward this opinion. On the other hand, if there be any truth in this theory, such measurements should be of value to industrial corporations in determining the physical fitness of applicants for employment.

The total number of persons examined in this series was 309. A study was made of some four hundred other examination records, but the results in respect to chest measure varied so markedly from this series that they were disregarded as inaccurate. Of these 309 the length of trunk from upper border of sternum to upper border of pubis was measured in 160 and compared with those showing length of sternum and total height from head to foot. The length of sternum varied as much in those with short or normal bodies as it did in those with bodies more than twenty-two inches in length. The average body length was 21.3 inches. There were nineteen with bodies more than twenty-two inches long, and all of these showed an increase in the length of chest above the average. The average length of sternum was 6.2 inches and yet there were only five who had a sternum less than six inches long.\* All five of these had a corresponding decrease in the length of the body and, instead of being under weight, they were normal or above, and were well developed in every way. It is true that a long sternum is often associated with a short body, but none of this series showed evidence of being more robust than the others. In fact, the opposite was more often true, and

the only conclusion that can be drawn in reference to the length of the sternum is that it is subject to independent variation apart from variations in the length of the anterior surface of the body, and such variations seldom produce anything more than an insignificant increase in the proportionate length of the waist, but may often decrease it below the average.

It was interesting to note that out of thirty-five men who were more than seventy inches tall, more than two-thirds, or 72 per cent, had bodies no more than normal in length; 80 per cent of the men who were less than 68 inches tall had bodies of average or greater than average length. In two the bodies were longer than normal. This certainly justifies the conclusion that the tendency to variation in the length of the long bones is far greater, and, also, that the variation in their length is not influenced by the same factors that cause a variation in the length of the trunk. Such selective variations can only be explained by pre-supposing trophic nerve centers as it is absurd to assume that such hereditary variations could be transmitted by a hormone that reacted with the substance of long bones and not with those of the trunk. We have here important evidence that the nervous system exerts a direct control over the growth and shape of the body tissues.

## Correlations Are Drawn

My work as examining physician for a certain corporation, as well as through general experience, had early brought out the correlation that individuals with poorly developed chests and narrow shoulders show a delicacy of health and a heightened susceptibility to the effects of such conditions as chronic tonsilitis, pyorrhea, and other organic disturbances which was in direct proportion to the size of the chest. On the other hand, men of large frame often exhibited the most advanced forms of pyorrhea, tonsilitis, etc., without much apparent loss in body vigor, an observation decidedly confirmed by the study of the chest measurements of these 160 men. In order to determine within what limits such variations in size may be regarded as normal, the study was made to include some 309 cases.

The average chest measurement of these, taken at forceful expiration, was 34.63 inches. In 68 the chest measure ranged from 34 to 34.57 inches; 78 were included in the group of 33.5 to 34 inches; and 29 were between 33 and 33.5. Below 33, however, there were only 36, or 11 per cent. As the measurements 33 to 34.5 included 110, or 75 per cent of the total below 34.6, it is fairly conservative to consider any variation below that as sub-normal, especially as the greater number of them were above 33.5, and 89 per cent of the total number were above 33 inches.

Taking 33, then, as the arbitrary standard, one has only to inspect this class of 36 below the line to realize with startling force that there is plenty of reason for considering them defective in respects other than in their shallow chests. Without a single exception they represent persons considerably below normal efficiency. Above thirty-three inches this universal deficiency does not hold true and in this group there are a number of individuals with chest measurements of 33 to 33.5 who are of normal

1. Wiggers: The Circulation in Health and Disease.

\*Piersol's Anatomy gives 6.56 inches; Streinch gives 6.42 in. This speaks favorably for the accuracy of the measurements reported in this study.

weight and vigor. Below thirty-three, however, it is as if we have crossed a barrier behind which healthy vigor and robust vitality is impossible. As a single group they would present a most sorry array, a huge delight for a student in physical diagnosis. The average weight for the group was 140.02 pounds. Seventeen were stunted an inch or more below the normal height; eight of the thirty-six had enlarged tonsils, and were under weight; nine had pyorrhea or dental caries; three exhibited heart disease in some form. One was tuberculous, another had a hernia. All but twelve had at the time, or gave a history of some serious ailment, and only two weighed more than 150 pounds. Of these two, one weighed 155, the other 165 pounds, and both were more than seventy inches tall, so this was no favorable degree of nutrition considering their heights. Comparing their state of nutrition with those whose chest measure was thirty-three inches or more, only 38 of the 273 weighed less than 150 pounds. This does not prove that poor nutrition and disease are impossible to those who have chest measurements of more than thirty-three inches, but it does demonstrate that the incidence of disease and general debility is nearly 100 per cent in those with a poorly developed thorax.

The question now is: Can the debility be the result of the poor development or is the poor development the effect of disease conditions? Looking at it from a purely inductive standpoint, we see that there are just as many—thirty-eight—persons undernourished and defective who have normal thoraces as with subnormal chests. It is logical to conclude then that as we find debility more frequently associated with a normally developed chest than with a subnormal and yet the incidence of disease or debility is ten times greater in the under-developed thorax, therefore the lack of chest development is the cause rather than the effect.

### Thoracic Movements and Circulation

A comparison of a fairly large group of persons with under-developed thoraces in persons having normal fully developed thoraces has shown that such a deficiency has a marked influence on general bodily vigor and the state of nutrition, and accompanies a decreased resistance to disease. Just as common experience has shown that persons with flat or small chests are more susceptible to tuberculosis, we have observed in this series a similar weakness in respect to other diseases. The obvious explanation of this, and the one most likely to be advanced, is that the smaller capacity of the lungs decreases the oxygenation of the blood and does not permit an active metabolism. A little reflection, however, indicates that the rôle that the respiratory movements play in the gaseous exchange of the blood with the outer air is of secondary importance as compared to their effect on the circulation of the blood. To begin with, we know that the ordinary respiratory capacity of the lungs is far in excess of any ordinary need. It has been shown, for example, that the carbon dioxide in the inhaled atmosphere may be increased more than twice the usual amount without producing any discomfort. In all clinical conditions in which we find an interference with the respiratory function of the lungs, such as in pneumonia, there is generally a compensating increase in the respiratory rate; yet in these individuals with poorly developed chests the respiratory rate is not increased. The small chested type, under exertion, shows signs of fatigue long before any cyanosis appears. Cyanosis occurs far more frequently and more readily in pathological conditions affecting the pulmonary circulation than in those affecting the respiratory function, as in pneumothorax, pleurisy with

effusion, and advanced tuberculosis. The benefit obtained by this class of people by changing them to an outdoor environment has commonly been attributed to the influence of the purer air rather than to the stimulating effect of sunlight and changed mode of living, but we have never heard of anyone with sufficient confidence in this supposition to propose treating tuberculous cases in an indoor atmosphere, washed and properly oxygenated. As a matter of fact, the difference in percentage of oxygen in country air and thickly populated streets is so small a fraction as to be negligible. Men working in a very smoky atmosphere show conditions of health comparing fairly well with that of farmers. Common experience, therefore, leads us to assume that we have been endowed with a respiratory equipment far in excess of any ordinary demands that may be placed upon it.

While we could enumerate many other clinical conditions which might lead us to suspect that the aëration of the blood is accomplished in an easy and an ample way by the respiratory movements in even a poorly developed thorax, such reasoning by analogy is open to fallacy and at best can only be suggestive. There is plenty of evidence, however, that the continual changes of intrathoracic pressure produced by the rhythmic contraction of the diaphragm have a most profound effect on the circulation of the blood. A word regarding the mechanics of respiration may not be out of place here. The expression "chest expansion" has been responsible for much popular misconception as to the manner in which inflation of the lungs is brought about. The ribs themselves do not expand, as any anatomist knows, and yet a great many of them go on speaking and thinking just as if such an effect actually occurs. Through the action of the muscles of respiration a change in the shape of the thorax occurs so that the horizontal diameter is enlarged at the expense of the longitudinal. At the same time that this occurs, a contraction of the diaphragm causes this membrane to move downward so that the pleural cavity is greatly enlarged at the expense of the abdominal. This produces an increase in the intra-abdominal pressure and, when such an increase is great enough, there occurs some bulging of the abdominal walls. This latter effect is often spoken of as abdominal or diaphragmatic breathing, in contradistinction to thoracic breathing, and yet common sense will tell us that so long as we know the chest wall is a comparatively inelastic bony structure, enlargement of the pleural cavity can take place only at the expense of the abdominal cavity.

What does occur in so-called thoracic breathing is that the ribs are drawn forcibly upward by a rotation on their long axis and at the same time a sharp contraction of the abdominal muscles takes place, forcing the abdominal contents against the diaphragm and increasing the tension on that organ, thereby still further enlarging the pleural cavity. The expansion of the abdomen is upward and laterally instead of downward and forward, as in what is termed deep breathing. The fact that this type of breathing is found more common in women is in most cases due to the old fashioned practice of tight lacing.

It may be assuming too much indulgence to review these simple, well known facts of physiology, but they are constantly ignored to such a degree that we are justified in emphasizing them. How often is the fact that ease of respiration depends largely on intra-abdominal pressure recognized in the sick-room? How many thousands of hospital patients in whom the conservation of strength is vital to their recovery are lying prone on their backs without so much as a bolster under the knees to relieve them? How many school children are daily

forced to "sit up straight" in stiff, unnatural postures because they may get round shouldered when they instinctively know that a humped up position is far more comfortable? If my teachers didn't want me to slide down on my back bone, why didn't they put in seats instead of perches to balance on? The place to stiffen a child's back bone is on the playground, not by making him miserable on awkward, right angle seats as if his back bone were meant to be a concrete pillar hinged on his legs. Comfortable seats when they are studying is essential for children. You sit more comfortably in a chair tilted back against the wall because it relaxes the abdomen, and makes it easier to breathe. Women can not appreciate that because they wear high corsets. They are always out of breath. Why does a tired man draw his knees up when he lies down to sleep? Formerly I wondered why dyspneic cardiac cases often prefer to lie on their sides rather than be propped up. I understand now. They had to push against a tight belly every time they took a breath. When a woman faints, her corset must be loosened but you never asked why except that you knew it made it easier for her to breathe. Not all physiology is learned in the laboratory.

The chief point in all this is the decided effect that this alternating rise and fall of pressure in the pleural and abdominal cavities has on the flow of blood from the portal system into the intra-thoracic veins. The capacity of the portal system is nearly as great as all the rest of the veins in the body combined. Picture, then, the flow of blood that must take place when pressure is applied to this great lake simultaneously with a release of pressure or suction produced within the thorax by the act of inspiration. This same suction has its effect on the flow of blood from the veins of the head and upper trunk into the superior vena cava, although the effect is not so marked in the upright position on account of the constant action of gravity. The effect of this movement of blood toward the heart must make itself felt all the way back to the peripheral capillaries resulting in a decrease in the resistance to the flow of blood from the arterial into the venous system. As there can be but very little back flow of blood on account of the valves in the peripheral veins, the increased volume of blood in the venae cavae must escape into the heart when expiration causes a rise in intra-thoracic pressure. This causes the heart to fill more rapidly and fully during diastole, with a consequent increase in the rate and force of the heart beat.<sup>2</sup> The dilatation of the heart sometimes produced by taking several rapid deep inspirations may be sufficient to cause a transient giddiness and roaring in the ears.

The powerful part that the respiration plays in the circulation of the blood may be readily observed in most any blood pressure tracing and becomes more noticeable in conditions that produce a fall in the arterial pressure. Recently Sewall<sup>2</sup> in a most delightful presentation of this subject has shown that by following the method of applying auscultation in connection with the pneumatic cuff used by Foiey, Coblentz, and Snyder, this influence of respiration on blood pressure changes may be readily demonstrated in a clinical way. Using this method, he found a decided difference in the systolic pressure during inspiration and expiration varying with the depth of respiration from 5 to 40 mm. A difference of 40 mm. means that with a normal pulse pressure of 40 mm., we may by taking deep inspirations and expiring forcefully add to the systolic force of the heart beat by 100 per cent.

It is to be remembered that along with this measurable increase in arterial pressure there is produced a decrease in the resistance to the venous return, so that there should be a still further increase in the velocity of the blood flow beyond that resulting from the increase in systolic force.

It is very easy for one to demonstrate to himself this relationship of respiration to the output of the heart. Let him try to make even the smallest kind of forceful muscular exertion, such as tightly clenching the fist, and he will find that he involuntarily adds to the force or depth of his respiration. When such muscular exertion becomes violent enough, as, for example, in heavy lifting, the expiratory effort may be made with such force as to cause a grunt to accompany it. Anyone's observation will verify that.

This discussion would scarcely be complete without a few remarks on the most desirable method of developing the thorax. While it may be perceived that any sort of athletic exertion will have its effect in promoting the vigor and depth of the respiratory excursion, such activity naturally will not have nearly so pronounced a result in building up the muscles of the thorax as will those movements which call directly into action the accessory muscles of respiration. Furthermore, there are several muscles attached to the ribs which take no part in respiration but, in fact, exert a counter force. These are the *serratus magnus* and the abdominal muscles. Nevertheless, any development of these must stimulate a greater growth in their bony support. By adding to the resistance to the action of the respiratory muscles they compel them to work harder and so there is a compensating hypertrophy of the latter. Common observation will bear this out. As a class the farmer lad or the young factory hand, persons who are obliged to do a great deal of heavy lifting, swinging an axe, etc., have larger and stronger frames than the athletic high school or college youth. The latter may be just as active and perhaps consume more energy than the former class, but their movements are of a light, quick nature rather than prolonged steady strains of the trunk muscles.

The sort of athletic games and exercises practised in our gymnasiums are not calculated to develop a robust, sturdy type. They cultivate beautiful muscle coordination and dexterity and agility, but poor staying power. Such exercises as do call into play the trunk muscles to a large degree, notably swimming, are so violent that they can not be long sustained. Persons desiring to develop the shoulder and trunk muscles and indirectly enlarge their chest measurements, should work with the saw-buck, the axe, the pick, and shovel, the scrub brush, and the sledge. If something more genteel and less remindful of irksome labor is demanded, then we can substitute the medicine ball, putting the shot, and the setting up exercises carried out with a heavy rifle as taught in the manual of arms. The fault with so many physical culture systems is that they undertake to accomplish in fifteen or twenty minutes what should be spread over two or three hours at least. We hear a great deal about military training as a means for attaining physical efficiency, but we lose sight of the fact that a little industrial training might also have considerable merit in that respect. In our opinion, many men are forced into the lighter occupations for which they are unfitted simply because in their youth and school days they neglected the kind of work that would have given them the robust proportions and vigor necessary for the heavy labor in the industrial arts. Also, it is possible that we have here the explanation of why the men who grow up on the farm rise to such eminence in city

2. Sewall, H.: On the Clinical Significance of Postural Changes in the Blood Pressure, and the Secondary Waves of Arterial Blood Pressure. *Am. Jour. Med. Sc.*, 1920, clviii, 786.

life in spite of the handicap of a district school education and other disadvantages in mental culture. It is simply that they are able to out-work the other man.

### Health Through Hard Work

Absolutely nothing was found in this investigation to bear out the notion that variations in the length of the abdomen as measured from pubis to sternum have anything to do with constitutional inferiority.

It was found that variation in the length of the long bones occurred with much more frequency than variation in the length of the trunk. A long trunk is sometimes found associated with short legs but not nearly so often as a short body is seen in connection with long extremities.

Next to the body weight, the chest measurement may be said to be the most important index as to general efficiency. The body weight, taken into consideration along with the size of the chest, affords a fairly accurate index of the general health of the individual, and of that person's capacity for hard work.

The average chest measurement in 309 examinations was 34.63 inches.

All those whose chest measurements were an inch and one-half or more below the average showed decided evidence of physical impairment and general debility.

This close relationship of the size and strength of the thorax to general well being is explained by the effect that the respiratory movements have on the circulation of the blood.

In this connection it is pointed out that, contrary to a prevalent erroneous conception, the abdominal muscles do not assist in inspiration but rather oppose it; and, for this reason, the most restful sitting or reclining posture is one which permits abdominal relaxation. Proprietors of theaters and other places furnishing amusement to the tired business man should bear this in mind and fashion their seats accordingly.

A great part of the study of the circulation in recent years has centered about functional activity of the heart. Some notable contributions have been made to medical science, particularly in respect to the mechanism controlling cardiac rhythm and its disorders, as well as newer methods in testing the functional capacity of the heart muscle. Through the interest aroused in these discoveries, however, we have come to focus our attention too much on the heart as if that were the only element upon which circulatory efficiency depends. While the heart is the most contractile part of the circulatory system, it must not be forgotten that the blood does not flow through a rigid system of tubes, but in every part of the arterial-venous system there is continually taking place a change in pressure from sources either outside the vessel wall or in the contractile tissue of the vessels themselves. The influence of respiration on the circulation of blood is only one of the many factors that must engage our consideration before we can decide whether this or that person has a healthy circulation. When we consider that in the present state of our knowledge the treatment of many acute diseases lies largely in supportive measures, it may be conceded that a knowledge and understanding of every element that will maintain the circulation at its highest vigor with the least effort is highly desirable.

It is superficial thinking to attribute the delicacy of the modern woman, in such cases as its exists, to corsets, high heels, city life, etc., when the real truth of the matter is that it may be invariably traced to a freedom from the kind of work that develops big shoulders and strong backs. Physical development comes only through hard work,

"resistance exercises," if you prefer. To expect to attain such development with a few minutes daily spent at some light calisthenic exercises is like trying to move a mountain with a crowbar, you can only move a little at a time

### INTERNATIONAL JOURNAL OF PUBLIC HEALTH

The November issue of the *International Journal of Public Health* contains an article by Leon Bernard on the war and social prophylaxis of tuberculosis, with the conclusion that out of our recognition of the duty of looking after the tuberculous soldier has developed the basis of a complete anti-tuberculosis organization. In order to attack tuberculosis at its source it will be necessary to include hygiene in the education of children and energetically campaign against alcoholism and radical changes in his conditions.

Dr. Alfred F. Hess reports the instance of scurvy during the World War, which was rather extensive, notwithstanding the fact that the condition is fairly simple of control. Very few cases are described on the western front, but it was most frequent in Russia and next in frequency among the nations neighboring Russia. There are many accounts of scurvy among Italian troops. The greatest amount of scurvy affecting civilian populations is reported from Austria, particularly in Vienna, and in Great Britain it manifested itself in institutions caring for the poor. We must still regard war and scurvy as associated evils, for war is closely linked with famine and food deprivation.

Other articles in the same issue are as follows: Leonard Rogers, "Leper Colonies and Improved Treatment in the Control of the Disease"; George C. Shattuck, "Treatment of Typhus Fever"; Massimo Sella, "The Antimalaria Campaign at Fiumicino (Rome), with Epidemiological and Biological Notes."

### DR. SAMUEL J. MELTZER DIES

Dr. Samuel J. Meltzer, of the Rockefeller Institute for Medical Research, who contributed many important discoveries to medical science, notably the method of "pharyngeal insufflation," died in New York, November 7, 1920. He was born in Russia sixty-nine years ago, received his general education in Königsberg, Prussia, and then studied philosophy and medicine at the University of Berlin.

In 1911 Dr. Meltzer announced the scientific proof of what he termed a "peripheral mechanism" for distributing substances throughout the body aside from the circulatory system of the heart, veins, and lymphatics. As a result of the special studies of wounded soldiers made at the institute in 1914, Dr. Meltzer discovered a new method of treating lockjaw. His device previously used in artificial respiration was found available against tetanus.

Dr. Meltzer held the rank of Major in the Medical Officers' Reserve Corps. He was a member of many medical societies and had been president of several, including the Association of American Physicians. He wrote more than two hundred monographs on biology, physiology, and allied topics.

### UNREST LAID TO NERVES

The State Conservation Commission of New York in a recent report urges as an offset to the social unrest attributable to the requirements of modern efficiency that education be given to the conservation of wild places and wild life to promote the general physical and mental well being and happiness of the people.



# PUBLIC HEALTH NURSING

## Industrial, Social, School, and Rural Nursing, Maternity Care, Child Welfare

KATHERINE M. OLMSTED, R. N., *Editor*

### FACING THE FACTS

WE NOTICED in the November issue of *Hospital Progress*, official magazine of the Catholic Hospital Association of the United States and Canada, a very well written article on the "Shortage of Nurses," by Dr. Edmond G. Zimmerer of Lincoln, Neb. We agree with Dr. Zimmerer when he asserts that "there is just as much reason for lowering the educational standards of schools for nurses in the present emergency as there would be in closing colleges and universities in order to fill the depleted ranks of the harvest hands or railroad laborers. The slightly educated nurses are always the first ones by legal or illegal means to raise the fees, which makes it just as difficult for the poor man to secure the services of even a poorly qualified nurse."

Our poor people and our laboring classes will never be properly nursed in their homes at times of illness until we have—not "poor nurses for poor people"—but good, intelligent, well trained nurses, supported by public funds, who will give bedside nursing when needed, and who will be called upon by all people in time of need, as they now call upon the public servants known as police, firemen, and health department experts.

Dr. Zimmerer spoils a good argument, however, by saying that "the talk of shortening the course for nurses and reducing somewhat the preliminary educational requirements has met with some protest, it is true, but mainly this protest comes from those who are selfishly interested in seeing that the field is not too crowded"; however, he does express the hope that their protest will not be heeded.

We regret very much to hear that Dr. Zimmerer has among his acquaintance some nurses who may belong to the opposition and favor lowering the standards of our schools; but we wish to assure him, and the possible readers of his article, that nurses, as individuals and as groups, everywhere stand for higher requirements and better training.

The state nursing associations both in Missouri and Iowa have at recent meetings unanimously voted in favor of raising the requirements of schools desiring to be accredited by state legislation to four years high school entrance requirements, and undoubtedly many other states are doing likewise.

The lay people, directors of the hospital, and training school boards are everywhere beginning to recognize the significance of the evident reluctance of young women to enter this profession, and that its cause has not necessarily anything to do with the caliber of the young women of today. It has, though, something very seriously to do with the status of nursing as a profession, and, also, with the opportunities for training which are offered.

If the body of men and women who are now in control of schools for nurses take the task seriously they might do much in finding a solution of the present situation by conducting an independent research into the situations which exist in their schools for nurses.

Anyone who has had anything to do with sickness, in private homes or in public health, knows that the shortage of nurses is no imaginary one and that within the last year a decidedly decreased number of students have entered schools for nurses, the single exception being in those schools which have notably high educational standards.

The focusing of the public interest upon nursing problems has been quite disconcerting. The veil of sentimentality vanishes and much appears as it really is. A group of community servants entirely well intentioned, but more or less poorly prepared for their tasks, are being placed in an urgent field. The recent inquiry conducted by the Rockefeller Foundation regarding nursing and the education of nurses will entail some extraordinary revelations, undoubtedly demonstrating the fact that present policy in nursing education is discredited by its results and that a sane, sound, reasonable plan needs to be put into operation under able leadership at once.

Present conditions in nursing education may be summed up as follows: Any person or group of persons may assemble a number of sick persons under a roof and call the place a hospital and they may start a school for nurses, offering young women instruction in one of the most vital and difficult arts. It is not necessary to assure competent educational authorities that the school can provide proper instruction, or even suitable living and working conditions. The fact that many hospitals do their best to keep faith with their pupils does not lessen the need of a competent authority which guarantees that pupils entering schools for nurses will receive sound and systematic instruction in their chosen calling. Attempts are being made in the various states by the graduate nurses' associations to formulate certain standards and to conduct inspection, but inspectors, to be useful, must carry certain authority.

Various panaceas have been recommended to relieve the situation, such as shortening the course, lowering educational entrance requirements, and increasing the monthly allowance—none of which will in any degree lessen or alleviate the critical condition in which the profession of nursing now finds itself. Proof of this is evident in the fact that the only schools for nurses in this country which are not suffering from a shortage of students are the ones which have held their standards high above all that laws demand, the schools which keep barely up to the level of the requirements of the laws in each state are the

ones which are suffering most severely from the shortage of pupil nurses. That many prominent persons are becoming keenly concerned about the nursing situation is evidenced by the following letters recently received.

Dr. Irving Fisher, of the Department of Political Economy, Yale University, affirms that "changes should be made as following in most existing schools for nurses: Use the eight hour shift. It is a wonder that nurses in their hospital training have so long stood the long hours of work and perpetual strain. . . .

Have ward workers to do the cleaning work and even make beds in rush time.

Nurses should have a whole month's vacation in each year of training, in order to keep their health unimpaired."

The psychological effect of the "all powerful" supervisor is something terrifying to the younger nurses. It seems to me very important that the salaries of supervisors should be raised so that the very best women can be obtained. Supervisors ought to have teaching ability and should be big enough women to know thoroughly the points of view of the younger women and how to "get at them." In other words, supervision should build constructively instead of destructively.

In remedying the present shortage of nurses, the hospitals should not lower their standards, but raise them.

Dr. Livingston Farrand, director of American Red Cross, says:

There is no one problem in the present health situation in the United States more important than that of increasing the number of nurses and assuring the quality of those who enter that profession.

If there is one fact that has been developed in the public health campaigns of the last two decades, it has been that the nurse is the central factor in applying practically what we want scientifically as to the prevention of disease and the building up of community health. The shortage in nurses following the war has created a critical condition and one that must be met if progress is to be made. I feel, therefore, that the concentration of effort along this line is called for from every agency in the country.

Dr. H. S. Cumming, Surgeon General of United States Public Health Service, recently stated that:

The time has passed when the establishment of training schools for nurses can be looked upon only as a means of having the nursing in hospitals done for a minimum cost, and if the hospitals are to keep up their quota of pupils and sufficient nurses trained to meet the country's needs, some radical changes in the attitude of hospital authorities toward pupil nurses are necessary.

It is a well known statistical fact that nurses, in their service, pay a higher tuition fee for their education than is paid by any other students in the world, therefore, among the changes considered necessary should be:

(1) Proper instruction in nursing education with paid, qualified, part time or full time instruction; recognition by boards of directors of hospitals conducting training schools, that the nurses' training school is an educational institution, and the service she renders is full payment for an adequate education.

(2) Sufficient time off duty for study, rest, and recreation.

(3) Affiliation with other schools of nursing and nursing organizations, such as public in its various forms, social service work, etc.

(4) Training schools for nurses should be registered if pupils are accepted.

If well bred, well educated, intelligent women are to enter the profession of nursing—the kind of women urgently needed—hospital authorities must recognize the necessity for making living conditions bearable, hours of duty shorter, and possibilities for nursing education greater.

Prof. C.-E. A. Winslow, School of Medicine, Yale University, asserted:

We are on threshold of an epoch-making period in nursing education. It is recognized by all thoughtful students

on this subject that the number of student nurses can be increased, not by lowering the standards and making the pathway easy, but by improving the character of the education offered; and the training school of the future will be an institution of university grade, capable of attracting and holding the best type of young women in the country.

There are no natural qualifications and there is no type of preparation too good to equip women for the demands of the nursing profession of the present day. I believe that there is no other career that promises so much usefulness, so much satisfaction and so large a field of service to a woman as does a career in nursing, with the tremendous opportunities for institutional management and for the direction of public health activities which the tendency of events is creating.

The interest and cooperation of people like the above in the struggle being made by nurses to not only maintain, but raise nursing standards, makes us all take courage. We realize an occupation is not a profession simply by calling it one. But today the education of the nurse is undergoing such close scrutiny and so many readjustments are being made that it is fast becoming scientific, and soon the combination of a scientific education and a most useful calling will make it unnecessary for us constantly to have to enunciate the fact that "nursing is a profession."

EDITOR.

## NATIONAL AID FOR MATERNITY

THE proximate passage of the Sheppard-Towner Bill<sup>1</sup> is the object of a nation-wide interest which is being manifested by the child welfare committees of all national and state associations interested in promoting better health conditions. This bill has for its object the public protection of maternity and infancy. It provides for instruction in the hygiene of maternity and infancy and the household arts essential to the well being of mother and child; it provides for consultation centers and medical and nursing care for mothers and infants, at home or at a hospital.

It is recommended that the act be administered by a Federal Board on which are represented the United States Bureau of Education and the United States Public Health Service. The executive officer of the Board is the Chief of the Children's Bureau.

In the separate states the act may be administered by the Child Hygiene Division of the state board of health or, where such a board is lacking, by a specially created state board.

To carry on the provisions of the act, the Federal Government is to appropriate \$2,000,000 the first year, this sum to be annually increased until it reaches \$4,000,000.

It will be apportioned among the states in the proportion which their population bears to the total population of the United States, provided that each state appropriates a like sum. In addition to this sum, the bill provides for an annual appropriation of \$480,000 to be divided equally among the states without guarantee of a like sum.

It should be noted that the separate states are free to carry out their approved plans without interference from the Federal Board; that the Federal Government in this act does not propose to embark on a medical or

1. Since this editorial was written the Sheppard-Towner bill passed the Senate after opponents of the measure forced material modifications from its original form. As approved by the Senate the bill does not provide for more than a campaign of instruction for the expectant mother and for the care of infants, the provision for medical and nursing attention having been stricken from the bill. Instead of creating a new bureau for carrying out the purposes of the act, the Children's Bureau is directed to administer the act, and the expenditure as originally proposed of about four million dollars was reduced by about \$1,500,000 a year.



surgical campaign, but rather to stimulate and guide and make accessible instruction and care to all mothers and infants; that this service is in no way compulsory.

The Children's Bureau has shown by its investigations of the past seven years that the United States is wasting the lives of mothers and babies. It has recently been quoted that "a survey in rural areas in six states, as carried out by the Children's Bureau, shows that 80 per cent of the mothers had received no advice or trained care during pregnancy, due often to the inaccessibility and lack of hospitals, doctors, and nurses. It shows practically no organized effort to meet the need for instruction in prenatal and infant hygiene and for trained care during the period of confinement. The cost in many cases for providing adequate care was prohibitive.

"Of more than 22,000 city babies studied by the Children's Bureau, representing every type of home in seven cities, more than three-fifths were born into families where the father's earnings were below the amount which was at that time the minimum for providing the bare necessities of existence. Only one in ten was in a family where the father's earnings reached a fair minimum for comfort. Without the aid provided by the Sheppard-Towner Bill they are in no position effectively to safeguard their children."

Public health nurses are everywhere keenly interested and desirous of the immediate passage of this maternity and infancy bill. Every nurse should mention it and

explain it at every meeting she attends in city, small town, or rural district; and should see that in her town plenty of publicity is given to it in papers and at meetings.

EDITOR.

### LEAGUE FOR THE HARD OF HEARING

Public health nurses will be interested in the fact that the hard of hearing in Chicago have organized a league for mutual aid and improvement and to give vocational education to soldiers who were affected by deafness in the service. The league is officered by prominent men and women of Chicago who have given it their endorsement. Its headquarters are in the Auditorium Building in Chicago, its work being divided as follows:

*Educational:* Four free practice classes per week in lip reading. Additional practice can be obtained through league officers. It acts as a clearing house and reference bureau on all subjects pertaining to hearing.

*Recreational:* The League offers a large meeting place for social gathering. A tea and social hour are on the Saturday program. Lectures and special programs are given once a month. Card clubs meet twice a month. The men's club meets on Saturday evenings and the young people's club on the first Wednesday of each month.

The League has been designated by the Federal Board for Vocational Training to furnish lip reading instruction to deafened soldiers and sailors of the late war.

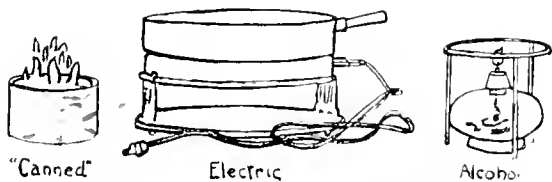
## THE PUBLIC HEALTH NURSE IS A TEACHER

SO many nurses are now giving classes in the "care of the sick" in schools to high school girls, in factories to working girls, and in clubs and homes to groups of mothers and young women, that the following suggestions will be most helpful. These have been compiled by the Red Cross in an effort to help the instructors of the classes in home hygiene and have been found most interesting.

### For Nurses Who Teach

1. Warn people of the necessary care should an epidemic appear.

#### HEAT

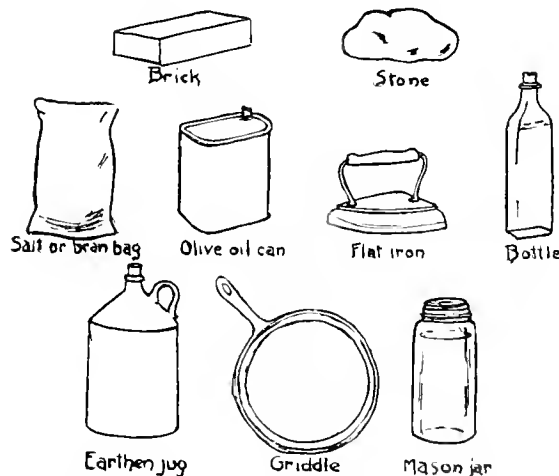


When heat is wanted, resort may be had to the electric grill, the alcohol flame, or to the "canned" variety.

2. Try always to make lessons practical, employing the things which will prove of value in the future.
3. Demonstrate carefully and explicitly, seeing that each student with her own hands succeeds in following your directions.
4. Teach prevention of unnecessary disease and the preservation of health. To common sense add technical knowledge.
5. This home nursing work is national service as well as a home duty.
6. In demonstrating plasters, poultices, etc., make small samples so as to conserve material.

7. In each case, after arrival in the field arrange for someone to make under your supervision and direction a bed cradle head rest, and stupe wringer.
8. In small communities you will have to carry some of your equipment from one teaching center to another, thus avoiding asking the people to secure things which are difficult for them to get in their community.
9. Emphasize that this instruction is for home nursing only.
10. Tell the people that one-third of our young American manhood was found unfit physically at the time of drafting; that 16,000 women die in the United States

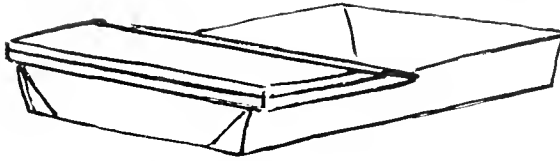
#### SUBSTITUTES FOR HOT WATER BAGS



To the ingenious nurse a variety of substitutes for the hot water bag are available.

every year from child-birth; that 90 per cent of the sickness in the world is in the homes; that 5,000,000 people were victims of the influenza last year, and 400,000 of them casualties; that 300,000 infants die every year in the United States from preventable causes; 70,000 infants under two years of age die annually in the United States of diarrhea and enteritis; that it is the ambition of all women to see if we can reduce the mortality figure 100,000 this year.

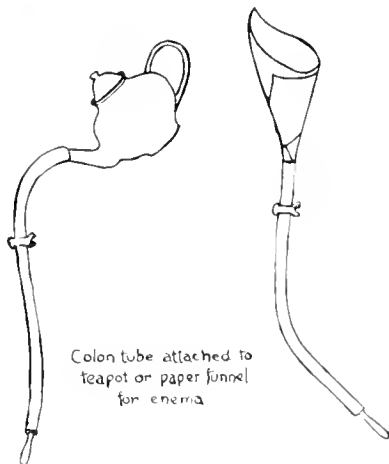
11. Tell your students that one way of fighting the fly menace is by using 2 per cent solution of formaldehyde, which is twenty parts water to one of formal-



Cleated boards placed at one end of a dripping pan transform it into a satisfactory substitute for a bed pan.

dehyde, in a saucer. This can be sweetened a little or dropped on a small piece of milk soaked bread. This is effective if all other fluids are put out of reach of the flies. A fly deposits from 75 to 125 eggs each time, and it takes but ten to twelve days for full development; only eight to ten days more and they are ready to lay eggs.

12. Be sure to tell the women the importance of isolating patients, using paper napkins and paper bags for excretions, care of fingers, and putting to bed in case of infectious colds or influenza.
13. Don't fumigate.
14. Don't wash the baby's mouth.

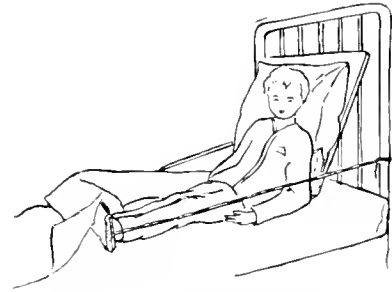


Colon tube attached to teapot or paper funnel for enema

An ordinary teapot or a paper funnel may be employed in giving an enema.

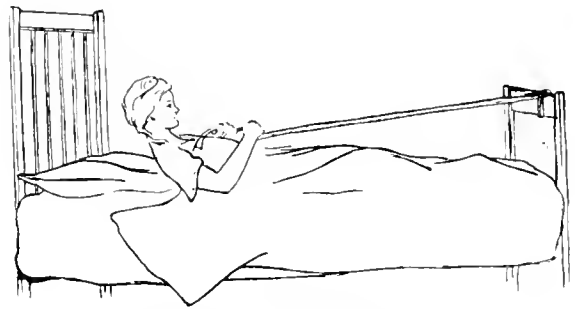
15. Emphasize at all times the importance of early detection of communicable diseases, *e. g.*, diphtheria, etc. Illustrate by examples in which patients suffering from diphtheria were treated for ordinary "sore throat."
16. Teach people to keep a child with cough and nasal discharge away from other members of family and by all means out of school.
17. Continually emphasize the remedial and disinfecting

properties of air, and sunlight. Encourage rural people to admit sunlight into every room in the house *daily*, especially when there is an infectious disease in the house.



The simple device of using a covered swing board saves a patient the discomfort of sliding in bed.

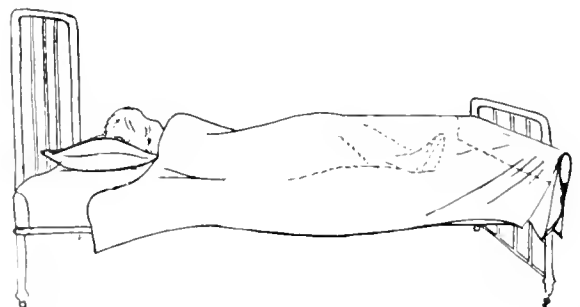
18. Always teach them to give plenty of water to patients suffering from any communicable disease.
19. For communicable diseases select the sunniest room in the house and always ventilate summer and winter.
20. Explain futility and absurdity of such measures as: the use of camphor, asafetida, sliced onions, plates, of chlorid of lime, carrying burning sulphur through



A clothesline, or a strip of sheeting, tied to the foot of the bed, will aid the patient in raising or turning herself.

room, etc., as disinfectants; also pinning towels in front of open windows, tacking sheet in front of doorway to prevent the transmission of infection.

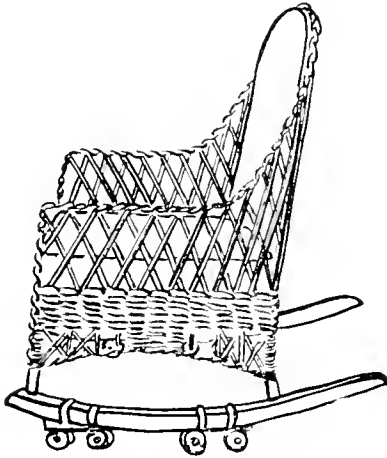
21. Explain and repeat necessity of boiling clothes, dishes, and all material coming in contact with a patient suffering from communicable disease.
22. Encourage discussions and the asking of questions.
23. Never become technical. Bear in mind difference between teaching nurses and teaching groups in home care of the sick.
24. Show concretely how to prepare a room in a home in which a patient suffering from a communicable disease will be nursed.



To relieve the patient from the weight of bedclothing, place a board or a leaf of table across the foot of bed.

### Tests of our Teaching

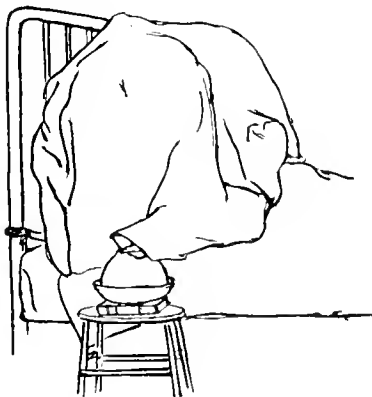
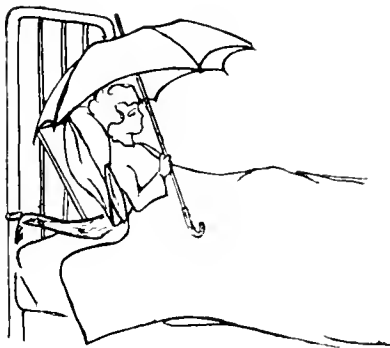
1. Do we always speak the language of the groups we are teaching?
2. Do we test the material presented to our groups



An ordinary rocker, with two pairs of roller skates, provides the invalid with a wheel chair.

before ascertaining whether or not we have considered the plane of their knowledge?

3. Do we convey tangible facts, and can a practical application be made in the home of every point we teach?
4. Do we teach up to the limit of our knowledge, or do



A blanket and an umbrella constitute an "inhalation tent" that answers every requirement.

we invigorate and enrich our lives by the acquisition of new knowledge and information pertaining to our problems?

5. Is our teaching mechanical, or perfunctory? Illustrate.
6. Is our method of presentation always clear, related, methodical, or is it a bunch of unrelated material?
7. Is the lesson always adapted to age, type and mentality of our groups?

### How to Improve Equipment

*Inhalation outfit.*—Place steaming tea kettle in pan of coals on chair. Make tent for patient with blankets and papers hung over cord attached to head of bed, patient and steam to be inclosed in open umbrella covered with blanket.



Place pillow-covered rocks or sandbag under knees



To prevent a patient from slipping in bed, place pillow-covered rocks or sandbag under knees, or place under the knees a pillow-covered broomstick tied to the head of bed.

*Substitutes for lubricating enema points.*—Face cream, sweet cream, salad oil, unsalted lard and lard substitutes.

*To elevate bed.*—Remove castors and place legs of bed on blocks. Place blocks or substitutes beneath corners of springs.

*Back rests.*—Suit case held in place by bandage, inverted chair, or bread board braced with sand bags or tied with bandage, makes a satisfactory back rest.

*Bed table.*—Ironing board resting on chairs which are placed on opposite sides of bed, a bread board supported on books, a soap or cracker box with three sides removed, or a home made table with short legs can be used for a bed table.

*Protecting patient from draft.*—Pin blankets over clothes horse or a blanket over rope stretched from head to foot of bed to protect the patient from a draft.

*Prevent patient from slipping in bed.*—Place under knees pillow folded over broomstick, then a broomstick tied to head of bed.

*Exercising baby.*—Low pen may be made from packing box, or by stretching chicken wire around post driven in ground.

*Steam or hot pack.*—Take dry corn cobs, put into water and let come to boil. Protect patient with blankets and newspapers. Place cobs on top of lower blankets and cover closely with another blanket.

*Patient's tray.*—Dripping pan—cover with napkin.

*Graduate for measuring any liquid.*—Quart jar with strip of adhesive side of jar, the ounces being indicated on adhesive.

*To relieve pressure under back, elbows, heels, or hips.*—Stitch together two circular pieces of cloth of desired size leaving small opening on outer seam. Fill with cotton,

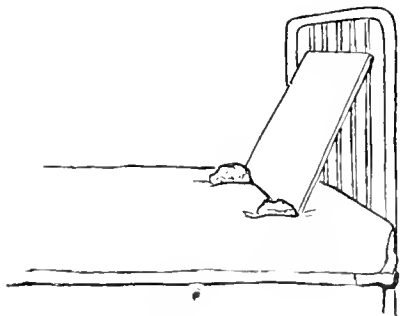


This improvised bed table is made with an ironing board which rests on chairs.

hair, excelsior, or bran and sew up opening.

*Bed pan.*—A cleated board may be placed over one end of dripping pan to be used as an improvised bed pan; or, use a shallow washpan, the patient's hips to be raised slightly and supported by nurse's hands or a pillow.

*Enema can.*—The colon tube may be attached to a paper funnel or a teapot.



Prevent a backrest from sliding by bracing it with rocks or sandbags.

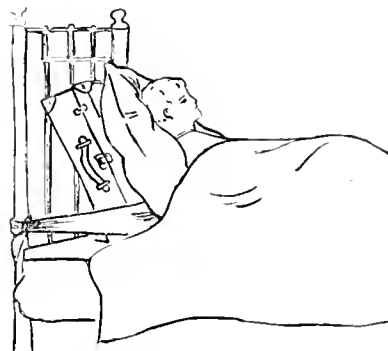
*To cool fever patient.*—Fill bottles or rubber hot water bags with cold water. Place bottles or bags under patients hands at back of neck or on forehead. Keep water cool.

*Hot water bag.*—For application of heat to abdomen, use hot flannel, aluminum pie tins, or kettle covers covered with a towel. For limbs, fruit jars, jugs or bottles filled with hot water and covered may be employed with precautions against leaking or burning.

*Bed cradle.*—The best cradle is made from barrel hoops nailed together with lath and cut to fit the patient. Use pillows at each side of limbs or abdomen to remove the

weight of the covering in some cases. A light weight folding chair can be placed upside down under covering to good advantage. Sometimes a camp stool can be used.

*Headrest.*—For this purpose use a brace nailed to a



A suitcase held in place by a bandage will serve as a backrest.

large board or a dining chair, placed upside down with top of chair back toward lower part of patients spine, with pillows between chair and patient's back for comfort.

*High bed.*—Ordinary bed should be raised by use of blocks.

*Bed protection.*—Substitute for oil sheeting, newspapers, cheese cloth pads, clean worn out quilts or blankets cut into pads the desired size.

*Urinals.*—Use tin cans or milk bottles which can be destroyed when no longer needed by patient.

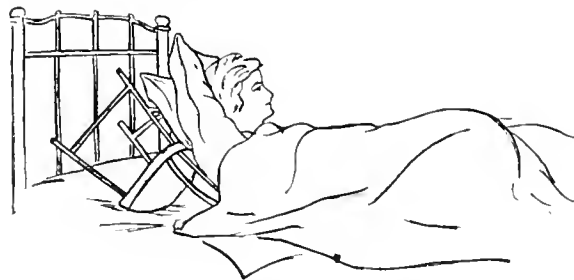
*Feeding tubes.*—Use straws or flaring tumblers filled half full to allow gradual tipping without spilling.

*Iceless coolers.*—Vessel of aluminum or crockery may be kept refreshed by refilling with cold water, the top to be covered with cloth wrung out of cold water. Food placed in this cooler keeps fresh for some time.

*Screens.*—Strong cord or wire may be stretched across room two or three ways, over which to fasten sheets so that they will slide easily aside when not needed.

*Sick room door.*—In hot weather use one square of muslin, sew loops or rings in each of the four corners, fasten to hooks in door casing, hang top edge just above level of eyes when standing.

*Chamber for infant.*—Cut round hole in bottom of ordinary child's chair, place under chair a vessel that could be used for that purpose alone.



An inverted chair will serve to elevate the head of the patient.

*Bed table.*—For bed table a twenty-seven-inch board with nine-inch legs at each corner or boards nailed at each end for support when it is used across a bed patient's lap.

My general philosophy of education is that its broad and ultimate function is to extend the area of human happiness and to promote the general welfare of humanity.—James H. Harris.

# INFANT WELFARE WORK IN LOWELL

By KATE KOHLSAAT, R.N., SUPERINTENDENT OF NURSES, LOWELL, MASS.

LOWELL, Mass., as probably everyone knows, comes near the top of the list, sometimes achieving the very top in the matter of high infant death rate. On account of this the Lowell Guild Visiting Nurses Association has placed special effort in the past year on the extension of the work of its baby hygiene department.

The clinics for sick and well babies held in the Guild rooms, 17 Dutton Street, on Tuesday and Friday of each week, attained such proportions that it was deemed advisable, during the summer months at least, to establish branch clinics. With this thought in mind the Board of Education was approached and they generously gave the Guild the use of a room in two school buildings that

idea of the difficulties encountered may be imagined from the fact that seventeen nationalities are represented in the conferences of one month. Fully 50 per cent of the mothers attending conferences are French Canadians and Greeks, so we have found it most advantageous to have a nurse who speaks French fluently and is able to understand Greek fairly well. We have been fortunate in securing the services of a Greek social worker as interpreter when our problems become too difficult for the nurses to handle. The atmosphere of our conferences is splendid, the mothers are all joining in conversation and in admiration of one another's babies. The most discouraging feature of the work is the fact that the mothers are allowed to work in the mills during the greater part of their pregnancy and then return to work as soon after confinement as possible. However, the results of the past three months, July, August, and September, are very gratifying and the work should be far reaching and have a wider influence each year.

During July there were two baby hygiene nurses in the field and in August a third nurse was added. These nurses have had 700 babies directly under their supervision. There were forty-seven clinics held with an attendance of 1,337 babies. The nurses made 2,673 home visits to instruct the mothers how to carry out the doctor's orders.

In 1903, or when the city of Lowell was smaller than it is now, there were 267 infant deaths for July, August, and September. In 1920 there were 113 deaths of infants one year of age or under during July, August, and September, this being the lowest record for the past thirteen years.

## Mothercraft Is Taught

The nurses have been enjoying their classes in "Mothercraft" among the young girls of foreign parentage, the object being to teach the children simple rules in personal hygiene together with the proper care of the baby. It is surprising to see with what interest they proceed from lesson to lesson, for the children learn easily and in many cases it is only through the children that we are able to reach the mother.

In addition to the baby hygiene department, the Lowell



It is a lucky baby who has so many trained supervisors directly interested in whether it eats right and grows as it should. The child supervision in Rochester is a boon to mothers, and a direct social asset.

could be used as clinic conference rooms during July and August. These school buildings, located in entirely different parts of the city, together with our location at 17 Dutton Street, equalized the distribution of our efforts fairly well over the entire city.

## Babies Given Right Start

Doctor and nurses were in attendance at each conference. The babies were weighed and a careful record of their gain or loss, together with their entire condition was recorded. The nurses try to teach all the mothers the importance of regular feeding, proper clothing, and fresh air, and the danger of over feeding. We realize how hard it is for some mothers to pay attention to detail when they have many other things to do and the baby cries most of the time. Our object is the instructing of the mothers in carrying out the orders of the conference doctors and encouraging maternal nursing whenever possible, thereby giving the baby the right start in life.

As there is a large foreign population in Lowell, some



The mothers who bring their babies to the Baby Hygiene Clinic can tell their troubles in their own tongue. Young girls are trained in Mothercraft, and the lowest record of infant mortality in thirteen years was reached this year.



The clinics take care of sick and well babies. All factors are fostered in the effort to give the babies a right start in life.

A special piece of child welfare work, with a staff of three nurses, that the Red

Guild has a staff of eight graduate nurses in the field, giving bedside care in the homes. Our prenatal nursing has grown within the past year and our aim is to fill the gap between the prenatal nursing and aftercare to mothers and babies by providing nurses at the time of confinement.

Cross is financing, also has its headquarters in the Guild rooms. Their clinics for young babies are held in connection with the Guild's clinics, but a separate clinic for the children from two to six years is held on Monday afternoon of each week.

An instructor from the Harvard Infantile Paralysis Commission holds a weekly clinic in our rooms, where she gives treatments to the children under their care; also a medical gymnast has two clinics a week, giving treatments to patients suffering from obstetrical paralysis.

With these various activities carried on under the roof of the Lowell Guild, no one can be blind to the fact that the Lowell Guild Visiting Nurses Association is doing its bit towards the better health conditions of the city.

## PENNSYLVANIA ESSAYS TO PREVENT DENTAL CARIES IN THE SCHOOL CHILD

By GEORGE K. STRODE, M.D., INTERNATIONAL HEALTH BOARD, NEW YORK CITY, FORMERLY CHIEF, DIVISION OF SCHOOL HEALTH, HARRISBURG, PA.

EVER since medical examination of school children became an integral part of our public school system, attention has been focused on the teeth. This has been but natural, since, irrespective of the location of a school or the social status of the pupils, no physical defect occurs with such frequency as dental caries.

dren primarily requires preventive measures, certain far seeing dentists and physicians have developed campaigns based on the simple principles of dental prophylaxis. Perhaps the best example of such an experimental campaign is to be found in Bridgeport, Conn., where under the able direction of Dr. A. C. Fones a prophylactic dental service was installed about six years ago. The success attending this piece of work has long since taken it out of the class of experiments and it now stands as a splendid demonstration of the practicability of dental prophylaxis.

Impressed with the sound principles on which school dental prophylaxis is based and the sane methods devised for applying these principles, the Department of Health determined to further such work in Pennsylvania.

At the outset we were convinced that there was urgent need of attacking the dental problem. We were familiar with the extent to which school children's teeth are carious and the effects of carious teeth, not only upon health but upon academic progress. We knew dental caries to be chiefly a disease of childhood and adolescence, and that the teeth, if kept sound until past twenty, are most likely to remain sound through life.



A dental ambulance was made the medium of carrying out the measures of dental prophylaxis, a dental unit consisting of a dentist and two nurses. Outlying districts were thus reached.

### A School Health Problem

Effort to correct the condition has resulted in the establishment of dental clinics in large numbers throughout the United States. Many of these clinics have been in operation for ten years or more and, therefore, ample time has elapsed in which to judge of their effectiveness. Those in position to know assert that dental clinics have been of great service but are entirely inadequate for the work at hand. Their function has been to repair the damage incident to caries and not to prevent the development of caries. As a consequence, the solution of the problem of dental caries has not been greatly hastened by the dental clinic, *per se*.

Realizing that the dental problem among school chil-



If 93 per cent of the children have "unclean" teeth, 100 per cent of them can be interested in dental prophylaxis if the right appeal is made.

Our task was essentially a school health problem and it seemed to us that the state Department of Health not only should indorse dental prophylaxis but should actually demonstrate to the school authorities what it is and how it can be applied in the school.

Fortunately, a mobile dental ambulance was made available to the Department for a short period in the spring of 1920. A dental unit was formed consisting of a dentist and two dental hygienists.

So far as we know, prophylactic dental service had not been attempted in any of the schools of Pennsylvania before these demonstrations. Dental clinics, however, had become fairly common, so that there was a ready soil in many places for the implanting of the prophylactic idea.

#### Plan Procedure of Demonstration

From the school boards of certain cities permission was obtained to make a demonstration in the schools. The nature of the demonstration was explained as consisting of: (1) Actual cleaning and polishing of the children's teeth by dental hygienists, this to be done by hand, using steel scalers and orange wood sticks in hand polishers, all stains and accretions being removed, giving the teeth clear, smooth, highly polished surfaces. (2) A charted examination of every mouth. (3) Tooth brush drills and class room talks on dental hygiene. (4) Filling of small cavities by the dentist in charge.

It was explained that the school routine would be but slightly affected. The tooth brush drill and class room talks were planned to occupy about fifteen minutes a day, but aside from these nothing was to be done in the class room.

The cleaning and polishing of the children's teeth were done outside the class room in folding dental chairs which were set up in any vacant room having good light, or in the end of a hall.

The demonstrations were scheduled to occupy from ten days to two weeks and the work was confined to fourth grade pupils, as we felt that more striking results were obtainable in children of ten or twelve years.

By means of a demonstration we sought to show the school authorities that it is practicable to give every child in a school prophylactic treatment. We promised to obtain accurate data on which to estimate the length of time it would require to carry out such work in all the elementary grades and to give a working basis on which to determine the actual cost per pupil.



The cleaning and polishing of the children's teeth were done outside of the class room. The folding dental chairs could be set up in any vacant room having good light, or at the end of a hall.



Health depends on missionary work. Remedial defects of all kinds are 18 per cent more prevalent in Class 4 than in classes 1 and 2, which districts are not so remote as those in Class 4.

Soon after a demonstration was begun, the dentist in charge would arrange for talks before the Chamber of Commerce, Kiwanis Club, Rotary Club, women's clubs, and other similar organizations. An earnest effort was made to interest not only the school authorities but other leaders in the community, for such an innovation could scarcely be incorporated into the school system without popular support.

During a period of four months, twelve communities, varying in size from 12,000 to 150,000, were visited. As the findings in these several communities did not differ materially from one another, they have been combined and are presented in the following table:

	No.	Per cent
Number of pupils examined. All teeth were cleaned and polished by dental hygienists	644	....
Number that used tooth brush ineffectually	460	71.4
Number whose teeth were not clean.....	603	93.5
Number with carious teeth.....	622	96.5
Total number of cavities.....	3,933	....
Average number of cavities per mouth.....	6.3	....
Total number of cavities filled.....	1,083	27.5
Total number of teeth extracted.....	528	....
Average number of minutes devoted to each child by hygienist.....	40	....

From these figures we note that 71 per cent of the children either used a tooth brush at such irregular or infrequent intervals as to be valueless, or did not use one at all. And it is safe to say that the great majority of the 29 per cent who cleaned their teeth daily did not use efficient methods. Otherwise we are at a loss to explain the 93.5 per cent of children whose teeth were not clean.

The dictum "a clean tooth never decays" seems to find confirmation in these statistics, which show the close parallel between carious teeth (96.5 per cent) and unclean teeth (93.5 per cent).





Tooth brush drills and class room talks made practical a system of tooth cleanliness. The most striking results are obtained in children of ten or twelve years from implanting the prophylactic idea.

Dental caries is dependent for its development upon two primary factors, bacteria and food debris. The ever present bacteria break down the food particles by the processes of fermentation and putrefaction, with a consequent production of acids. These acids attack the enamel at a vulnerable point, especially in crevices where food has an opportunity of resting. When the enamel is disintegrated, the softer dentine readily yields and the cavity rapidly enlarges. This process of decay is influenced by the nature of the food particles—the sugars most readily ferment; by the irregularity of the teeth—food particles more readily lodge between irregular teeth and are removed with more difficulty; and by the natural resistance of the teeth to decay—thin and defective enamel, a resultant of malnutrition in the baby, diminishes the resistance to decay.

### Dual Cause of Dental Caries

That the mouth cannot be kept sterile is obvious, but that it can be kept reasonably free of food debris is equally obvious. It is possible, therefore, to eliminate within practical limits one of the factors upon which dental caries is dependent. The elimination of this factor is the object of dental prophylaxis.



Proud of her teeth. It is possible to eliminate within practical limits one of the factors upon which dental caries is dependent.

The rather long and, to the lay mind, formidable term, "dental prophylaxis," means "tooth cleanliness." The dental hygienist's function in the school is not only to clean teeth mechanically but to give instruction in mouth cleanliness and develop habits which will eventuate in the pupil's ability to maintain mouth cleanliness.

The need for prophylaxis is eloquently argued by the exhibition of the 6.3 cavities per mouth which our examinations disclosed. Can this need be supplied at a cost which school boards will consider reasonable? It has been our experience that one dental hygienist can care for approximately seven children a day and, since it has been shown elsewhere that children's teeth usually require mechanical cleaning twice a year, it is obvious that the hygienist could care for about seven hundred children during a two hundred day school term. Dental hygienists may be secured for about the same cost as a good grade teacher, from one hundred to one hundred and twenty-five dollars a month, and the hygienist will care for about seventeen times as many pupils as the grade teacher.

Our demonstrations succeeded in proving to the communities visited that the mouths of school children present a problem which calls for prompt solution. That the boards of school directors were favorably impressed with the practicability of the methods used in our demonstrations was evidenced most concretely by the action of one school board which voted the sum of fifty-eight hundred dollars for dental prophylaxis during the school year of 1920-21.

The success of the first four months of our campaign has determined us to continue the work until dental prophylaxis becomes an integral part of every school health service in Pennsylvania.

### NORMS IN WEIGHT OF CHILDREN

There having been much discussion regarding the various height and weight tables for children published by the different organizations and apparently some confusion and doubt having arisen in the minds of many teachers and health workers regarding the accuracy of the different tables, it has long been regarded as desirable for the principal organizations which were putting out tables to meet in conference and consider the possibility of adopting a uniform table which would be acceptable to all.

For this purpose a meeting was called in New York on December 3, 1920, by Dr. L. Emmett Holt, chairman of the Child Health Organization of America, to which the following organizations were invited: American Child Hygiene Association, Child Health Organization, Federal Bureau of Education, Federal Children's Bureau, McCormick Memorial Fund, Nutrition Clinics for Delicate Children, Public Health Service, and the School of Public Health, Yale University.

The conference was attended by Dr. Bird T. Baldwin, Dr. Taliaferro Clark, Dr. William R. P. Emerson, Dr. L. Emmett Holt, Mr. Ira V. Hiscock, Mr. Frank A. Manny, Dr. Anna R. Rude, Mr. Sydenstricker, Prof. Edward L. Thorndike, Mrs. Ira Crouch Wood, Dr. Thomas D. Wood, and Dr. Robert M. Woodbury. The various tables now in use were critically considered and it was found that there was substantial agreement in the figures used by all, the difference in the tables being chiefly a matter of presentation or statement.

Dr. Baldwin was appointed a committee to draft a table embodying the suggestions made, to be presented to the representatives of the organizations at a subsequent meeting to be held within the next few months, before its final adoption and publication.

## TRAVELING PUBLICITY CAMPAIGNS

THE itinerant trader has always been a bearer of news, but we are now becoming familiar with a new kind of peddler, whose pack contains new ideas of useful information, not goods. He goes about the country representing departments of national and state government and private organizations. His trade is in the interest of better citizenship and health, not profits. The activities of these peddlers have been described in a book, issued by the Russel Sage Foundation, under the title "Traveling Publicity Campaigns" with a sub-title "Educational Tours of Railroad Trains and Motor Vehicles" by Mary Swain Routzahn.<sup>1</sup> The mode of traveling has progressed from wagons to trains and from trains to motor trucks. The wares are helps to better crops, better homes, better health. Accounts of some one hundred and thirty educational tours by train, auto trucks, motorcycles, trolley car, wagon, and even by house boat, are drawn upon in assembling this review of a comparatively new method of education and publicity.

### Makes Unique Appeal

The primary reason for the use of the popular educational tours on wheels is the easiest on which it can be made to include the more remote rural districts in the itinerary of well equipped speakers and graphic presentations of health exhibits. Its unique appeal gets and holds the attention of a public which would not lend an eye or an ear to the more familiar channels of letters, newspapers, and posters. The train or truck campaign has the dynamic value of personal contact for direct appeal, and its wake is usually marked by better local organization and stimulated activities along health lines. For the rapid dissemination of information over wide areas it does not of course compare with a method which duplicates the material of an exhibit and sends it out to all points at once from the central office. The cost and scale of dif-



The Children's Bureau of the United States Department of Labor has provided a big gray automobile truck, known as the Child Welfare Special. It is believed by the department that the ground can be covered better by the Special than in any other way.

ferent enterprises of this character vary so widely that estimates of the cost cannot be given from one car project. The book includes information on all these matters as well as programs and the planning of itineraries.

Trains have been used in organization work for a number of years. Agricultural trains have carried models

and methods direct to farms. Industries have been stimulated by propaganda tours and, recently, the methods which proved for the success in promoting the fruit industry, dairy products, and pure seed promotion, have been used in Liberty Loans, food conservation, and child welfare. The Kansas Health Car "Warren" has been no small factor in the recent impetus given to child welfare



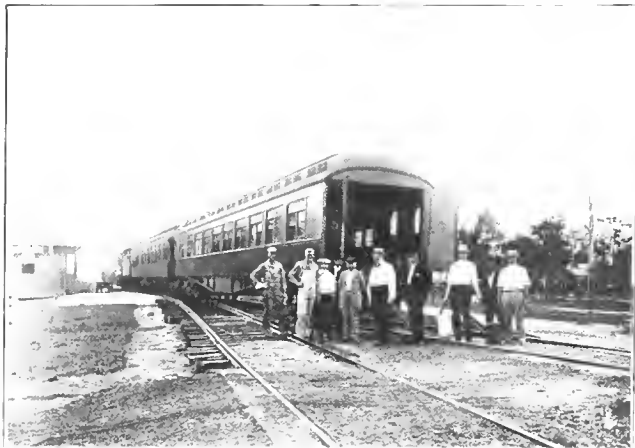
The New York health automobile carries motion picture apparatus, for both indoor and outdoor exhibits, as well as dispensary equipment for holding clinics.

organizations in Kansas. A test of the value has been made of the "Child Welfare Special" recently put into the field by the Children's Bureau. This car is roomy enough to provide a conference room and two drawing rooms. Most of the equipment is built in. Favorable report is made on the success of the "Special" in its hold on the public interest, and the physician in charge believes that the ground has been covered better by the "Special" than would have been possible in any other way. It has served well its most important function of stimulating local organization and in permitting follow-up work by the community.

The Healthmobile of New York is a large automobile truck especially designed to carry to the more isolated rural sections of the state the same procedures which have been effective in the centers of population. Besides laboratory equipment, it carries motion pictures and exhibit material, it transports speakers who hold health meetings and conduct child welfare demonstrations and examinations throughout an itinerary which covers systematically the more inaccessible parts of the state. By this means the Health Department is in a position to cooperate with any local committee which makes its wants known. Louisiana, also, has made extensive use of traveling health campaigns. A pioneer in carrying the message of health over the state in trains was Dr. Oscar Dowling, president of the Louisiana State Board of Health. The continuous tours of the Louisiana train have demonstrated its value. One car of the Louisiana Health train has been turned into a traveling publicity health laboratory, which enables the sanitary inspection of any town visited. This train has attracted the attention of health workers in other states and has made a number of trips outside of Louisiana in response to their request.

The two chief advantages of the educational tour as a

1. Routzahn, Mary Swain: Russell Sage Foundation, New York, 1920.



The health car of the Louisiana Department of Health. One end of the laboratory car is fitted up as a garage. Here a Ford is stored ready for use by the inspectors for a quick tour of each town visited.

publicity method are seen to be, (1) in bringing before scattered audiences—often in out-of-the-way rural districts—well equipped speakers and good graphic material otherwise prohibitively expensive; and (2) the news interest attendant upon the visit of the train to a town. This form of publicity cannot, of course, be well applied in campaigns which require the dissemination of information over large reaches of territory at practically the same time; but it is undoubtedly the quickest way of displaying the same objects to a number of communities.

### MORE ABOUT THE COUNTY FAIR\*

By STELLA FULLER, Extension Secretary, Central Branch Office, National Organization for Public Health Nursing, Chicago.

**M**ANY magazine writers prepare their special season articles many months in advance. Vacation stories are difficult to write when snow and ice are on the ground. For the same reasons it is hard to write interesting fiction about winter holidays in July. Neither is it easy or wise for health workers to wait for early spring to plan work for next year's county fair.

Now is the time. The recent fairs are still in mind and nurses are discussing the results of their health programs. The health worker should have a notebook or, better still, a card file which would remind her of special duties to be carried out at different times during the year.

### Get the People to Help

As early as April or May, when schools are still in session, a publicity campaign concerning the health work at the county fair should be well under way. With the cooperation of the county superintendents of schools, the nurse might send out two letters, one to the teachers and one to the children of the whole county.

In these letters she should outline in an interesting, friendly manner her plans for the autumn fair, giving a list of suggestions and asking each school to volunteer ideas for the program.

At the same time an article should be placed in the county papers informing parents and people in general concerning the plan, and, of course, the nurse should speak about it at all the schools she visits and whenever she addresses public meetings. The churches are always glad to cooperate. One western pastor was willing to put health notices in the church bulletin.

Sticker stamps or leaflets are good advertising and may be used to carry a health lesson as well. These could be included with parcels by local storekeepers during the month previous to the fair.

The nurse might carry in her car a silk banner or other prize to be shown to the children and later given to the school making the best showing at the fair.

A very successful county nurse with the cooperation of her committee arranged to have the school houses open for a meeting every two weeks during the summer. The children came back to be weighed and measured, and the mothers brought their babies to be inspected. This would be a very convenient means of publicity for the nurse who is planning for the fair.

What the Nursing Committee can do to help:

1. Help to secure interest and money for prizes.
2. Arrange, well in advance, for required space and all furniture and articles needed.
3. Assist in training students who may be preparing plays or exhibits.
4. Help with clerical work which nurse will have to direct.

The school teachers are always willing to encourage their pupils in any endeavor that promotes physical efficiency.

The following suggestions may be helpful in arranging the program of the children.

1. Parade, with appropriate banners, of all pupils who have kept the Health Crusaders Chores.
2. Contest to determine the number of physically perfect pupils in county, with prizes carrying health lessons.
3. Exhibitions of menus and properly prepared, well balanced meals, including school lunches. Exhibits of proper lunch boxes with sample lunches.
4. Roll of Honor of all who have had teeth put in good condition during school year. This should be posted where it can easily be seen.
5. Floats carrying all school children who have had physical examination by physician during year.
6. Demonstrations of first aid, and home nursing.
7. Health posters.
8. Health essays.
9. Health Clown (to be trained during school year).
10. "Sandwich Man" carrying health signs, jokes, etc.

### AMERICAN JOURNAL OF NURSING

The December issue of the *American Journal of Nursing* contains an article by Grace M. Cook on the relation of central directories to private duty nurses. No better movement could be instituted, according to Miss Cook, toward professionalizing nurses than the identification of all properly trained and registered nurses.

In the same issue, Clara D. Noyes, of the American Red Cross, gives out figures on Red Cross Public Health Nursing, showing that these services have increased from 155 to 817. To the Red Cross belongs credit for having proved rural nursing to be perfectly practicable.

Details are given of the rapid expansion of a local nursing service developed in a New England town, in which clinics were utilized by all classes of the community under the plan of assigning the charge of a given clinic to a given physician, who then filled it with his patients, being assisted by other physicians. All the resources of the medical and nursing provisions of the community united with the Red Cross in making this work a success. The examination of about twelve hundred children disclosed about four hundred in need of operative care; 193 tonsil and adenoid operations were performed in one week.

\*Supplementary to an article on this subject by Miss Fuller, published in the August issue of MODERN MEDICINE.

# PROBLEMS IN SOCIAL MEDICINE

## Medical and Health Education, Child Welfare, Social Insurance, Rehabilitation, Medical Law and Allied Subjects

JOHN A. LAPP, LL.D., *Editor*

### PELLAGRA AND POVERTY

THE first reported study in which the degree of the long recognized association between poverty and pellagra incidence is measured in a definite, purely objective manner is that by Goldberger, Wheeler and Sydenstricker,<sup>1</sup> which is presented as the latest of a series of scholarly researches by these authors on the etiology of pellagra.

The study was made during 1916 in seven representative cotton mill villages situated in the northwestern part of South Carolina. In all, 747 households, comprising 4,160 persons, were considered and 97 cases of pellagra were discovered in this group. One of the striking facts made evident from the compilation of the data was that the prevalence of pellagra varied inversely with the size of the family income, this condition being forcibly brought out in the following table:

TABLE 1. NUMBER OF DEFINITE CASES OF PELLAGRA AND RATE PER 1,000 AMONG PERSONS OF DIFFERENT INCOME CLASSES IN SEVEN COTTON-MILL VILLAGES OF SOUTH CAROLINA IN 1916.

Half - month family income per adult male unit.	Total.			Males.			Females.		
	No. of Persons	No. of Cases	Rate per M	No. of Persons	No. of Cases	Rate per M	No. of Persons	No. of Cases	Rate per M
Less than \$6.00 .....	1,312	56	42.7	650	20	30.8	662	36	54.4
\$6.00-\$7.99 .....	1,037	27	26.0	521	6	11.5	516	21	40.7
\$8.00-\$9.99 .....	784	10	12.8	376	4	10.7	408	6	14.7
\$10.00-\$13.99 .....	736	3	4.1	363	0	0.0	373	3	8.0
\$14.00 and over .....	291	1	3.4	161	1	6.2	130	0	0.0
All incomes .....	4,160	97	23.3	2,071	31	11.9	2,089	66	31.6

The definite establishment of the correlation between the economic status of a family as measured by the family income and the incidence of pellagra, was but the first step in this study. For more than one hundred years observers have noted a striking relationship between these factors, but it remained for these American investigators to assign a definite and conclusive explanation for this condition.

Other diseases are frequently associated with poverty and the common explanation given is that families in the low income group are handicapped by bad hygiene and sanitation. In the case of pellagra earlier studies by

the same authors indicated clearly that no consistent correlation was found between certain factors of a sanitary character and the incidence of this disease. In the absence of any reasonable evidence that pellagra is an infectious disease it is probably unlikely that the hygienic and sanitary conditions had any effect on the prevalence of this disease. In order to rule out any difference which age and sex composition of the various income groups might have on the incidence of pellagra, the age and sex distribution was studied and found to be practically alike for the population of each economic class.

A brilliant comparison made by the authors of the supply of certain articles of food in households with lowest incomes and in those having at least two cases of pellagra with that household with the highest income, demonstrates that the detrimental effect of low income lies in the character of diet on which the families of the low income groups are obliged to subsist. From the point of view of income the following tendencies were noted:

(1) The smaller the income the smaller were the supplies purchased of all meat (except salt pork), green vegetables, fresh fruits, eggs, butter, cheese, preserved milk, lard, sugar (including syrup), and canned foods.

(2) The smaller the income the larger were the supplies purchased of salt pork and corn meal.

(3) In the households of the various income classes the quantities of the purchased supplies of dried peas and beans, potatoes, dried fruits, wheat flour and bread, fresh milk, and rice appeared without any consistent trend.

It is found that in a general, but quite definite way the food supply of the households of the lowest income class tends to be similar to that of the group of households in each of which two cases of pellagra occurred.

Low family income was not the sole factor determining the character of the household diet as it was found unfavorable conditions regarding the availability of food supplies were also responsible for deficient diet.

JULES SCHEVITZ.

### THE CHILDREN'S CODE IN MISSOURI

The Children's Code Commission of Missouri, in outlining its work for the coming session of the legislature, has elected to limit its program to pushing the passage of bills that were not adopted at the Fiftieth General Assembly, and amending some of those which were enacted in order to remove serious opposition and to make necessary changes to put the laws in harmony with recent advancements. Judge Rhodes E. Cave is chairman of the Commission, and Mr. J. L. Wagner is chairman on the Committee on Modification of Laws.

1. Goldberger, Wheeler, and Sydenstricker: United States Pub. Health Rep., xxxv, No. 46, p. 2673.

## INTERNATIONAL NURSING PROJECT

**H**EALTH work that knows no political boundaries and is as comprehensive as the needs of the whole people is the objective of the League of Red Cross Societies. The scope of health activities, details of administration, and means for the coordination of the efforts of all organizations as worked out in their several conferences are looking toward the unification of all health programs, looking toward the unification of programs everywhere, with less waste and greater effectiveness being the objective. The objects of the League of Red Cross Societies as stated in the Articles of Association are:

(1) To encourage and promote in every country in the world the establishment and development of a duly authorized voluntary national Red Cross organization, having as purposes the improvement of health, the prevention of disease, and the mitigation of suffering throughout the world, and to secure the cooperation of such organizations for these purposes.

(2) To promote the welfare of mankind by furnishing a medium for bringing within the reach of all the peoples the benefits to be derived from present known facts and new contributions to science and medical knowledge and their application.

(3) To furnish a medium for coordinating relief work in case of great national or international calamities.

Miss Alice Fitzgerald, Chief of the Department of Nursing of the League of Red Cross Societies, in a recent report, stated that the Public Health Nursing Project was "to awaken the people of the thirty-one countries now members of the League to a sense of their own obligations, to create a demand for public health nursing, and to stimulate each national Red Cross Society to assume an important part in these efforts. These are all steps in the right direction, but our service cannot end here. With the history of the public health nursing movement in the United States of America before us, we have an example which should be of the greatest assistance to us, as it is reasonable to suppose that, allowing for differences in nationalities, traditions, customs, needs and resources, the problem to be met in all the countries, and the methods to be adopted for their relief will be necessarily very similar in all cases. Many countries are facing some or all of the following problems: tuberculosis, infant mortality, ignorance of prenatal and post-natal care, inadequate hospital service for the sick, lack of supervision of the health of school children, lack of the most elementary knowledge of personal and home hygiene and of first aid of all sorts.

In dealing with these problems, each country will need the help of the trained public health nurse, and this nurse, on whom such a great responsibility will rest, must be provided with special training to fit her for her task. This training cannot be obtained in the countries which are just instituting public health campaigns and, unless the League is able immediately to come forward at this particularly suitable time and arrange to provide for this training, our world wide dream for the prevention of disease and the betterment of health and general welfare cannot take its first step towards becoming a reality.

It must be only a question of time before an international training school for public health nurses will be established in connection with the League. The main points of the scheme have been discussed and can be stated as follows: Such a training school for public health nurses must cover instruction on the following subjects: Child welfare, including prenatal care; tuberculosis nursing, including care and prevention; general medical nursing, as dealing with contagion, epidemics, prophylaxis; and general educational subjects, such as sociology, psychology, domestic science, dietetics, sanitation, housing, hygiene, the study of the administration of charity, city and state organizations, and other institutions in general. These subjects would have to be taught by experts in each line through courses of lectures.

In addition to these theoretical subjects it would be necessary to provide field work by affiliating with organized dispensaries, visiting nurses' associations, school nursing associations, settlements, industrial nursing activities, milk stations, and, where possible, country and rural nursing organizations. This outline is an average one

and our best schools in public health nursing offer courses in all these subjects.

Miss Fitzgerald's plan for a school was accepted by the Governing Board and nineteen students from eighteen



Katherine M. Olmstead, R.N., editor of Public Health Nursing, *MODERN MEDICINE*, has been appointed associate director of public health nursing for the League of Red Cross Societies.

countries are now enrolled in a course being conducted in connection with King's College, London. Later the League will establish its own training school. After the graduation of this first class the school will add to its staff field secretaries whose duty it will be to travel extensively, visit, and offer assistance to the graduates in their own fields, thus keeping up the points of contact between the League and the different countries, and securing students for the school.

Miss Katherine Olmsted, department editor on *MODERN MEDICINE*, has accepted the position of Associate Director of Public Health with the League and will leave early in February for Geneva, Switzerland. Under her direction and with her assistance public health nursing organizations will probably be formed in the following countries: Argentina, Australia, Belgium, Brazil, Canada, Chile, China, Cuba, Czecho-Slovakia, Denmark, France, Great Britain, Greece, Holland, India, Italy, Japan, New Zealand, Norway, Peru, Poland, Portugal, Roumania, Serbia, South Africa, Spain, Sweden, Switzerland, Uruguay, and Venezuela. Students will be selected from these countries and trained to continue and supervise the work in their own countries.

The wide experience of Miss Olmsted in executive capacity in connection with public health nursing projects both at home and abroad bespeak the quality of service to be expected of her in this new capacity. She will continue as editor in chief of the Department of Public Health Nursing in this magazine, thus affording the readers of this magazine a wider outlook in this field.

## HEALTH NURSING INSTRUCTION IN DAKOTA

Some time ago the Regents of Education of South Dakota officially established a school of Post-graduate Instruction in Public Health Nursing for the benefit of graduate nurses who wish to take up this branch of nursing. Miss Margaret Hughes, of New York City, was elected director of this department. Miss Hughes is a graduate of the Boston City Hospital, a post-graduate student of the Phipps Institute, Philadelphia.

# THE PUBLIC HEALTH MOVEMENT IN THE LIGHT OF MODERN PSYCHOLOGY\*

By DONALD B. ARMSTRONG, M.D., AND EUNICE B. ARMSTRONG, M.A., FRAMINGHAM, MASS.

BEFORE returning to an analysis of the psychological factors utilized in the success of the Red Cross, it may be useful to make our generalizations concrete by some illustrations of the conscious utilization of a few of the strong but often unsatisfied instincts. Many are the examples that could be chosen from modern industry. When the health worker-to-be studies the human material upon which his success depends as closely as does the modern employment manager, there will be more illustrations from the health field. The worker who uses this new psychological theory instead of his head will fail as completely as the man who thinks that the ability to do psycho-analysis is "born in one," or "a matter of common sense," any more than is ability to do a urinalysis.

It is impossible completely to understand the human heart either from the inside or the outside, but it is safer to take a chance with the light of some knowledge turned on than to leap in the dark as we do now. Before the leader in health can understand and use the motives of others he must have learned to understand and pierce the disguises of his own motives. It is not at all impossible for the man in charge to avoid unconsciously the possibility of able cooperation simply through failing to analyze his own desire. Perhaps the ideal head of the local committee would be the brother of a woman who has snubbed the executive. It is impossible for him often to believe that any relation of a person who failed to appreciate him can be either able or desirable. Again, the natural preference for doing only the work he does well or easily may hamper an executive. His vanity and desire for praise will unconsciously prevent him from speaking in public, however important that may be, if he does not do it well. His desire to maintain his authority will prevent the delegation of a conspicuous task to someone else, because of the necessary implication that anyone can do anything better than he, the leader. But no matter how completely a man knows his own motives, or how sympathetic he is with the motives of others, there will remain the eternal obstacle to health of human inertia. Most men prefer to be ill rather than to know it. Small-pox immunization seems to perpetuate itself as the battle against hookworm does not. Perhaps this is because the inertia of hookworm is by no means wholly unpleasant to the unconscious self, while the disfigurement of small-pox arouses an emotional response by its menace to the instincts for distinction, for love, and for beauty.

The humility which comes from an understanding of infinite complexity of human motives is perhaps the first step in the training for cooperation. An example of com-

*The human mind reacts according to mental laws that are universal. Prediction can be made as to the possible range of response to be elicited when conditions are known and under control.*

*With a nice adaptation of appeal, the suggested idea carries with it a picture of the end of the act which automatically tends to complete itself.*

*Mass action is rarely to be obtained on a rational basis. To state the need of a starving child creates no such appeal as to present its picture. Abstract thought lacks the dynamic energy of emotional impulse. Hence the necessity of an emotional appeal to call forth prompt motor response.*

*When preliminary work in campaigns takes into consideration what may be accomplished and sets itself no task psychologically impossible, a more uniform result will mark our organized efforts.*

plexity was the case of a woman who made much trouble about what volunteer work she should perform in the local Red Cross during the war. She had been an able stenographer, but she "simply could not do clerical work. It seems too easy, too little of a sacrifice." Larger factors involved were that the gray veil of the clerical worker was unbecoming, and that the typewriter itself reminded her of days whose social status she wished to forget; but neither could she make bandages. She was "too sensitive to the terrible suffering they represent." A

larger factor was that the social leaders in her town concentrated on refugee garments and she was interested in the work chiefly, though unconsciously, as an opportunity to increase her "society" connections. There was also a definite dislike of bandages because her husband, whom she had hated, had died of wounds in France and bandages reminded her of him whom she wished to forget. There was, however, beneath all these, the real reason why she had to work on refugee garments. To reach that work room she passed the desk of the Chapter vice-president at the hour he spent there; she had been for years in love with him and hoped much, though unconsciously, from her freedom and her proximity.

The complexity of the individual motive is no greater and is often identical with that of groups. The hearty cooperation of a whole body of school teachers may be enlisted if working for a health program incidentally gives them opportunity socially to meet unmarried men. Any small group of aliens or "inferiors" may often be won by giving them the chance to show their likeness to their fellows. Liberty bonds were sold, Young Men's Christian Association millions were raised, partly by the appeal to a man's desire to do as his fellows.

## The Instinct to Dominate

In a democracy, custom does not allow us to say much more than "I'm as good as anybody," with the distasteful implication that "anybody is as good as I." This thwarts the primitive desire for distinction, sometimes called "the will to dominate." Everyone really wants to say "I'm better than anybody"; but society refuses to allow this, and so we must satisfy ourselves with praise from others. This is annoying, because it implies effort to earn that praise, and the instinctive man wants satisfaction without effort; however, his need for praise is so driving that he will even work hard to get the praise custom does not allow him to bestow on himself. The bad boy deplored by his parents gets praise from his fellows for his badness. It is the praise that matters, not what the praise is for. A man would rather be known as a trouble maker than not known at all.

\*Part 1 of this article appeared in the December issue.



The bearing on the situation of the unconsciousness of the motive cannot be overemphasized. The Lady Bountiful who has provided milk stations in a town often becomes hostile to the official agency that takes them over. She justifies her hostility on the ground that the new work is badly or extravagantly carried on. The fact is, she did not crave health for children, but praise for herself, and praise must be provided if her usefulness is to continue. The same is often true of the benevolent employer. He dislikes the development of trade unions because their sick benefits deprive him of the gratitude and praise he desires. But he rationalizes his dislikes as a belief in the freedom of contracts.

The best executive will often be the man who makes the plan and then acts merely as the instrument to distribute jobs and praise. By identifying a man or organization with the work he is doing and then praising the work, you can give him, in a socially useful way, the praise he must have and you can at the same time get good work done. A man will project himself on to anything in order to get praise. If nothing better offers, he will accept the prize his baby takes in a baby contest as praise of himself. Incidentally, prizes gratify the will to dominate because they serve as a permanent token of superiority.

Industrial conditions do not give the average man sufficient chance to stand out among his fellows in his working hours. A program should take this into account and utilize chairmanships and even memberships on numerous committees as a means of satisfying, for the undistinguished man, the desire for distinction, thus gaining emotional approval for health work as a whole.

### The Self Feeling Contrasts

A man will do as much to avoid the feeling of inferiority as to gain the feeling of superiority. Nothings should be done which will emphasize inferiority and thus balk the will to dominate. Sick people fall back on the extreme badness of their condition in their desire for distinction. Intelligent treatment of sickness will emphasize the gain rather than the low condition. A patient will follow treatment for the sake of praise for making progress more than for the sake of the actual progress itself.

A humiliated person or a neglected or criticized group will devote all its desire-for-distinction instinct energy in seeking revenge. Discourtesy in asking questions for records, roughness in physical examinations, keeping people waiting or standing in line, cause an intolerable sense of inferiority. This is the danger to the social structure of "insolence of office." A "fresh" office boy can arouse hatred of a whole organization, for it is intolerable to self-love that a person low in the social scale should be able to wound us. Thence the transference of hatred of the subordinate to his organization. This makes obvious the danger of any public reprimand, or of ridicule, however justifiable and well done. Nor is ridicule of a third party safe, for ridicule creates the dread of ridicule.

Punishment may keep a child from repeating specific bad acts; it will not create the will to do good ones. Cooperation means a positive, not a negative result. There is a psychological economy in the "Resist not Evil" method.

The avoidance of affirmative inferiority is the justification of sinecures. In a case where his good will is important, and a man cannot be used where he is, if possible avoid discharging him; don't demote him, but promote him. It costs less than to fight his unconscious desire for revenge. Often, too, the executive's preference for discharge simply denotes that he is unwilling to be put

in the wrong and is merely expressing his own desire to dominate. An executive who is willing to be in the wrong can get more work done than the just and righteous man, at Versailles or elsewhere.

In gaining cooperation, it is less important to persuade your fellows to like you than to persuade them to like themselves.

It does not hurt to be inferior in one field if you have a chance to demonstrate your superiority in another. The pretty woman does not resent the homely woman's brains. The expert is disliked because he uses his knowledge to humiliate. The expert should see to it that the men he instructs know more about something than he does, even if it be only baseball scores.

It was not the actual improvements which the experts of the Mitchel administration in New York City accomplished that made them hated and lost the "Reformers" their re-election. It was the superiority and the expertness of the expert that made him hated. Then, too, the very word "reform" implies both adverse criticism and an attempt to interfere with a man's delightful and habitual inertia. Had the Mitchel administration sacrificed some of its achievements to letting the average man share in the plan-making and in the credit for the achievements, the idea of reform might have been disinfected; instead, the administration balked the distinction desire in others, while catering too fully to its own desire for distinction.

On a smaller scale the same hostility was aroused in certain Red Cross offices, where the new man in charge took down all the office partitions, removed all the name plates and titles and substituted a "democratic environment." The assistant secretary, lumped with the filing clerk, was no more angry than the assistant secretary's secretary, lumped with "the whole bunch of stenographers." The whole force devoted its energies to annoying the man who had decreased their opportunity for distinction. Yet the conscious reason found to explain the resentment was that it was "harder to work in a big, noisy room."

Resentment of arbitrary discrimination is another phase of this desire for distinction. Any possibility that Catholics or Protestants or Jews or Negroes or ministers or laboring men should think that they have been left out *as such*, should be avoided. Women should almost have been included in the above, for leaving women off committees is now beginning to be felt an arbitrary discrimination, implying not merely the natural thing, namely, that they are women, but rather implying that they are inferior.

To avoid balking the desire for distinction, it is important not to ask a man to do something at which he will fail. Public speaking for foreigners without much English is a humiliation. Making written reports and filling out questionnaires are irritating to a man who can maintain his feeling of superiority until he has to spell. He will tend to pick himself up by ridiculing the whole project of which the questionnaire becomes the symbol to him.

Apparently, attempts at coordination in the health and social field, prevention of overlapping, etc., which sound so reasonable, often arouse the most intense antagonism. Probably this is due to the unconscious recognition that in an orderly and disciplined whole there cannot be so many heads and sub-heads. Understanding of this problem will allow the old titles with their distinction-conferring value to survive even the completest reorganization. A small staff may do the work, but the lady presidents and the honorable chairman will provide the emotional approval based on one's own glorious participation, the glory of personal leadership.



This desire for distinction is often the underlying reason for demands for more money, rather than the desire for extra comforts. Money is with us the measure of a man. To measure a man in terms of service will tend to socialize this instinct for distinction.

### Desire to Create Instinctive

Other instincts we shall treat in much less detail. The instinct to create is too often confused with the sexual impulse. The instinct to create, though often allied with sex, is not identical; it is rather the instinct of self-expression. Offspring is the fundamental expression, but mental offspring are real creations, too, and the creation of health may satisfy the desire to procreate mentally, which our present wage system too often disregards. In order to give men the opportunity to construct and create, it may be well worth while to subordinate speed and efficiency. What a man builds, he loves. Even though the man at the top can make better plans in a morning than a committee can make in a month, he cannot afford to lose the cooperation he can gain by satisfying the instinct to build. But he doesn't have to use the committee's plans. Men love to make plans because they thus express themselves, and they will work hard to carry out a plan which they think is their own. The desire to create is linked with a desire to do good work. If the instinct to create is stimulated, men will attend conferences on method, read books, etc., in order to satisfy the desire to build well—which is the instinct of workmanship. A superimposed program balks the instinct of self-expression. A man may think of his fine contribution, even though it may have been only hanging an exhibit; and he will support the whole health plan for the sake of his bit in it. The idea that we must reward the man we ask to make plans is nonsense. He is in his little way an inventor, with an inventor's ecstasy of self-expression, and a prize is less of a stimulus than the mere opportunity to build.

### Love Instinct Is Dynamic

The love instinct is by far the most vigorous and forceful. No instinct is more complexly woven through all human acts, and it should be utilized in health work. Many patients get well to please the doctor. Much good work is done to please the chief, especially if he is attractive and his subordinates are women. But such love expression is not alone utilizable. The love of a leader satisfies the love instinct. It pays to put at the head of a committee someone who has the affection of his fellows. The younger, less mellow, better trained man may have to do the head work; but the beloved leader can arouse energy as he cannot. The aspect of the instinct to love which health work can especially satisfy is the love of one's children and their posterity. A man who follows no rule of health, because for himself he is willing to take chances, will carry life insurance for his beloved ones. Indeed, insurance policies are not sold rationally, but emotionally. The very union leader who for one reason or another is fighting medical inspection for himself is insisting on school medical inspection in Pennsylvania. The health program can attach to itself much of the force of parental love by warmly picturing good breeding, environmental infection, and infant, pre-school, and school nursing. The success of the "War to End War" appeal is a good example of this.

### Must Reckon With Fear Instinct

An instinct which present conditions fail to satisfy and which social plans can wisely take into account is the fear instinct. This is really the desire to feel fear, and

should be distinguished from the flight instinct. The opportunity to feel fear was so amply provided for man in the cave days that he acquired through habituation a desire or instinct to feel fear. The desire for adventure arises as an expression of this instinct. Stealing apples, running in front of automobiles, and telling ghost stories, all show the child's fear instinct. The average adult working man has all too little opportunity for adventure. His wife has less. The popularity of the "suicide jobs" in the steel plants may not be due wholly to their high pay. The man who refuses to use the guard provided for his machine is satisfying his fear instinct. The tramp riding blind baggage, the reckless automobilist, the big game hunter, the roller coaster fans, all show the craving of fear. The so-called fear of sickness, of old age and unemployment is an anxiety rather than a fear. The preparedness propaganda, and the present anti-Red propaganda both owe a considerable measure of their popularity to their satisfaction of the craving to fear.

### Loyalty as a Motive

Such satisfactions of the instinct to fear are either useless or undesirable. The point is that some satisfaction seems essential. It is inaccurate to say that working on machines is dangerous and therefore constitutes adventure. The man who guards the roller coaster as a job no longer finds riding an adventure. We must remember that the civilized man can get satisfaction from mental as well as physical adventure. Presiding at a health meeting, reading a report in public, even sitting on a platform; being put in command of a piece of social work; arguing or conflicting with a superior; or merely speaking to the big man at the head—these things give a thrill of fear and constitute adventure for many men and for more women. Such exciting, adventurous jobs should be distributed as widely as possible. There is a mistaken tendency to leave all such things to the "proved man."

The motive power of the instinct of loyalty is invaluable. The "we" feeling makes men work together best, and working together creates the "we" feeling. The importance of bringing together the different men engaged in a piece of work is great. Cooperation means good team work, and this you can't get if the members of the team never see each other. Conferences, committee meetings, mass meetings, all have their justification in their emotional rather than in their intellectual product. Training quarters have their psychological as well as their physiological value. The common meal, the common possession, likewise inspire loyalty. A beautiful building dedicated to health or a health room furnished by common subscription helps to satisfy the instincts for loyalty, for an ideal, and for beauty. Perhaps this is one of the chief values of the Health Center. Churches need their own buildings to hold the congregations together. Health requires its own outward, visible symbol. A common danger creates loyalty. Let a man know the factors he is fighting: let him feel that the battle with the death and sickness rates is his battle. A common experience likewise creates the "we" feeling and so serves the instinct of loyalty. Canvassing for funds has a distinct value in itself, whatever the intake may be.

Finally, let us consider the success of a conspicuous community group, the Red Cross, in obtaining funds and cooperation in its relation to these instincts.

(1) The desire for distinction was widely gratified. The largest giver, the fastest cutter, the neatest worker, the cleverest canvasser—all gained distinction. Extensive opportunities were provided for "nobodies to be some-

bodies." The somewhat military atmosphere of the Red Cross as well as war-time itself gave opportunity for the exercise of authority highly satisfying to the will to dominate. Praise of the work of the local chapters was generously administered and the individual workers basked in that praise. Many women, especially, were given for the first time positions of leadership which inspired them to do well, in the bright light of publicity turned on their endeavors.

(2) The instinct to create, to express one's self, was somewhat unnecessarily balked and the criticism of autocracy still survives. Opportunity for fundamental participation was relatively slight. There was little cooperation in the plan-making on Mt. Sinai. But this was less objectionable than a similar implication of inferiority in peace times, because of the number of free Americans who were saluting other free Americans. There was considerable compensation in the fact that the workers and chapters were shown the goal sought and their part in reaching it. Most of all, there was opportunity for real participation in the work offered to every man, woman, and child.

(3) The fear craving was largely satisfied. To some women the mere doing outside of the home the identical work to which they were accustomed was adventure. To others collecting funds in public places, to others speaking as delegates in sectional conferences, was not effort but excitement. The sign in the workrooms, "A thread left on a bandage may cost a life!" made working thrilling.

(4) The instinct to play, which the war spirit balked, was encouraged by the Red Cross. Dressing up in veils was partly playing. The entertainments justified by being "for the benefit of the Red Cross" gratified the instinct to play.

(5) The instinct of loyalty was tremendously utilized. Aside from the obvious appeal to loyalty to one's soldiers, one's country, and one's ideals, there were minor but more intimate opportunities for gratifying the loyalty instinct. The common workrooms had a spiritual as well as a utilitarian value. The wearing of a button, and more especially the wearing of a uniform in a time of uniform-wearing, gratified the desire to be like one's fellows. The same was true of the display of window and shop cards.

(6) The instinct to love was obviously given an intense gratification. Socks were not merely work, they were love itself; and the possibility of some outward expression of love was very gratifying at this time of intense emotional strain. Every war appeal contains directly or indirectly an appeal to the love instinct. "Work or give to make your children safe"; "The Greatest Mother in the World," were fundamentally satisfying appeals.

(7) The instinct of self-preservation was of course implicit in all war appeals.

(8) The repeated opportunities to give gratified the desire for self-sacrifice.

(9) The instinct of pity was especially reached both by the work of the Red Cross and by its best posters. It is noticeable how much pictures of sick or maltreated children are used in various educational exhibits. Also, the movies, as, for example, "Broken Blossoms," show the pleasure that results from feeling pity.

(10) The instincts for worship, for an ideal, and for beauty were gratified. The great ideal of service to friend and foe alike satisfied the much thwarted desire for an ideal. The advertising of the Red Cross was in itself beautiful, as were its parades and pageants. The uniforms were beautiful or thought to be so. These may

have served a similar purpose to ritual garments in religious exercises, and so have enlisted the instinct to worship.

(11) Nor did the Red Cross fail to utilize selfish desires. Pugnacity was given full opportunity for expression in the competition in work for funds, with other teams, other shops, schools, towns, and states.

This is but the casual running over of the appeals to a few instincts made by propaganda which succeeded. It may well be suggested to check up, as a matter of routine, any health program before attempting to put it into effect, with these two questions: (1) What instincts are balked by this program? (2) What instincts are satisfied by this program? With these inquiries as a basis, and with a rational use of applied modern psychology in practical health work, it is confidently believed that the future will hold, for health activities, an ever increasing assurance of successful service and accomplishment.

### TO AID IMMIGRANT WOMEN

The World's Committee of the Young Women's Christian Association, with headquarters in London, is planning the appointment of an International Immigration Secretary whose office it will be to correlate the work for immigrant women now being done by the Young Women's Christian Association in many countries and to develop new lines of service. The aim of the new department will be to get in touch with women and girls traveling from one country to another and through the Association representatives in the various countries to keep in touch with the travelers, in order to give any necessary help, from the time they leave their own country until they have reached their destination. A secretary from the United States is to be appointed to the office.

### A MODERN PEDIATRIC SERVICE

The more important elements of the organization of a modern pediatric service are analyzed in an article by Dr. Henry Heiman in the November issue of *Archives of Pediatrics*. Such a service should form an integral part of a large modern hospital and should include the infants' and children's wards and the out-patient department. Especially should the out-patient department be thoroughly organized as a means of extending greater opportunities for the diffusion of social and educational work in child hygiene and preventive pediatrics. A complete pediatric service of this kind should include the following functionaries: a pediatricist to the hospital, one associate, four adjuncts, sixteen senior assistants, sixteen junior assistants and an indefinite number of clinical assistants. Nutrition classes are included in the scheme. Pediatric classes for the routine of children of the pre-school age and a division for the correction of remedial defects are needed, and special facilities for the study of protein sensitization should be provided for cases of bronchial asthma, hay fever, urticaria, and eczema. It is only through balanced organization that it becomes possible to realize fully the possibilities of pediatric service.

### WHITE LIST OF HOSPITALS

The American College of Surgeons has just published a list of hospitals having one hundred beds or over which have been rated as efficient to the extent that they have complied with certain minimum standards laid down by the college. In the United States and Canada 692 general hospitals have been visited by agents of the College. The White List, including 377 hospitals, is available.

# A STUDY OF DISPENSARY PATIENTS

A REPORT BY THE PUBLIC HEALTH COMMITTEE OF THE NEW YORK ACADEMY OF MEDICINE

THE small percentage of reported poverty among those applying at the Lincoln and the New York Hospital Dispensary is surprising. Of the ninety-seven applicants interviewed at Lincoln Dispensary, only two claimed lack of money as the reason for applying, and at the New York Hospital Dispensary only one applicant out of fifty-two gave poverty as a reason. Among this indigent group, 77.1 per cent were women and children and 22.9 per cent men. According to racial distribution, the Slavs were most numerous in that group, 24.2 per cent of the Slavs giving poverty as the reason for seeking dispensary aid. Of the Irish, 21.2 per cent; of the Italians, 18.1 per cent; Negroes, 18.8 per cent; Germans, 19.3 per cent; and 12.4 per cent of the Hebrews gave lack of funds as a cause of recourse to the clinic. In all the groups with the exception of the Irish the preponderance was of women and children (Tables VII and VIII). As for other reasons, 5.5 per cent came because they were in need of the services of specialists or of special apparatus; 31 per cent were attracted to the dispensary by its reputation; 7.5 per cent were referred by private physicians; 2.3 per cent, by hospitals; 1.7 per cent, by other dispensaries; 2.1 per cent, by social agencies; 2 per cent, by school nurses; 4.1 per cent lacked confidence in their private physicians; 1.9 per cent came because they were out of work and could spare the time to come for medical advice. In this last group men constituted 55.5 per cent of the total number of cases (Table VII). The percentage of cases giving reputation of dispensary as a cause for their coming is interesting, in that it shows the extent to which the several dispensaries receive the endorsement of their clients. In this regard St. Luke's heads the list, 83.7 per cent of the patients in that institution giving this reason. This was also the reason given by 61.5 per cent of the patients at the New York Hospital

the rest were distributed among the several specialties. The dispensary has ceased to be a place where the indigent come for relief and medicines. The large masses of people have come to regard it as the only institution where the services of specialists can be obtained. In this light the social significance of the dispensary becomes apparent and in this light it must be regarded by the community.

After the general medical clinic, the surgical clinic received the largest percentage of cases, or 15.7 per cent. The eye clinic received 8.9 per cent; the ear, nose, and throat clinic 7.8 per cent; the gynecologic clinic 8 per cent; orthopedic clinic 7 per cent; children's clinic 6.6 per cent; skin disease clinic 6.6 per cent; neurologic 6 per cent; and the large percentage of 7.8 per cent of cases in the prenatal clinic is an indication of the extent to which the clinics take up public health functions. The clinical distribution of the patients of the various nationalities may or may not be of significance. Of all of the Italians, 19.9 per cent were in the surgical clinic, and 14.2 per cent in the eye clinic. This was the highest percentage of any nationality in that type of clinic. The Slavs showed the highest proportion in the orthopedic clinics, the Negroes in the gynecological and prenatal clinics. The Hebrews contributed more than half of the cases to the neurological clinics and more than one-third to the ear, nose, and throat clinic (Table IX).

## Conditions Prior to Application

Among the questions asked of the dispensary patient was included the duration of the condition and the manner of its treatment prior to coming to the dispensary. The information gathered indicates that 26.6 per cent of the patients were ill less than one month before application to the dispensary; 11.6 per cent had been ill from one to three months; 8 per cent had been ill from three to six months. In 5.6 per cent of the cases the duration was from six months to one year, and 25 per cent had suffered from the particular condition for more than a year. This would seem to indicate that more than 60 per cent of the cases come for the treatment of conditions of three months' duration or more. Among those with chronic ailments were many who stated that they had received previous treatment, either at the hands of private physicians or in hospitals or other dispensaries; but there remained a considerable group, 21.3 per cent of those ill more than three months, who had received no treatment whatsoever, and 2.4 per cent who had employed home remedies.

In studying the various racial groups with regard to treatment prior to applying to the dispensary, the Hebrews were the least neglected with regard to taking care of their conditions, as only 17.7 per cent stated that they received no previous treatment. The Negroes were among the most neglectful. The number of cases reporting the use of home remedies was very small, a total of eighteen, of whom five were native born, eight Hebrews, two Germans, the few remaining cases being scattered through other nationalities; 18.7 per cent of the cases had received former hospital treatment of their conditions, and 18.3 per cent had been at other dispensaries; 38 per cent had consulted private physicians (Table X).

In order to ascertain the "draining" area of the dis-

	Poverty	Illness	Lack of Confidence in Doctor	Desire to Have a Second Opinion	Referred by Specialist	Referred by Surgeon	Desire to Consult	Reputation of Dispensary	Referred by Private Physician	Referred by Hospital	Referred by Dispensary	Referred by Social Agency	Referred by School Nurse	Referred by Military Organization	Other	Total	Pct.	
Men	60	3	30	1	40	19	3	146	10	287	10	10	17	19	2	31	404	7.9
Women	146	5	41	8	50	14	2	287	10	287	10	10	17	19	2	76	876	88.7
Children	60	3	17	2	32	50	1	138	10	10	14	8	56	2	4	161	620	25.4
Total	266	11	88	11	122	83	6	611	30	584	20	20	34	21	4	747	1900	100
Pct.	10.1	.6	3.2	.2	5.6	4.2	.2	21.1	1.9	7.7	1.3	1.2	1.7	2.3	.4	25.1	100	

Dispensary, 59.6 per cent at the New York Eye and Ear Dispensary, 56.8 per cent in the Northeastern Dispensary, 55.9 per cent in the University of Bellevue Dispensary, 52.6 per cent at Mt. Sinai, and 51 per cent at the Demilt Dispensary.

## Distribution by Clinics

The best answer to the question, for what do the patients come to a dispensary, will probably be found in their distribution among the several departments of the dispensary. The distribution of 1,968 patients selected at random in the thirty-seven institutions seems to answer that question in a very emphatic way (Table IX). Only 16.3 per cent of them were in the general medical clinics;

\*The sixth of a series of articles on dispensary service prepared for the pages of MODERN MEDICINE. Continuation from November, 1920, issue.



Dispensary	Under One-half Mile		From One-half to One Mile		From One to Two Miles		From Two to Three Miles		From Three to Four Miles		From Four to Five Miles		Over Five Miles		Not Found at Address Given		Total
	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	
Beth Israel	39	43.9	8	17.1	3	4.9	-	-	1	1.6	-	-	5	5.1	5	5.1	61
Bethesda	6	17.7	5	13.1	13	28.8	6	13.5	3	6.6	-	-	9	20.4	1	2.2	47
Brooklyn	10	25.	14	32.	7	17.5	1	2.5	3	7.5	2	5.	2	5.	1	2.1	40
Cornell Medical College	14	16	12	22.2	9	16.6	3	7.2	2	3.7	-	-	18	25.3	2	2.7	74
Condit	22	51.	8	18.9	4	9.5	2	4.5	1	2.3	1	2.3	7	15.9	1	2.3	43
Forham	2	4.2	18	36.3	17	34.	1	2.1	7	14.0	1	2.1	2	4.2	-	-	47
Gouverneur	28	65.1	10	23.2	3	7.1	-	-	-	-	-	-	2	4.6	2	4.6	43
Harlem	49	69.	31	44.4	5	7.	-	-	-	-	-	-	-	-	6	8.4	70
Lehman	50	60.	8	16.	12	24.	-	-	-	-	-	-	-	-	-	-	70
Lenox Hill	12	20.3	22	37.2	5	8.4	3	5.	1	1.6	2	3.5	12	20.3	2	3.5	59
Lincoln	39	40.2	29	29.9	23	23.7	3	3.	1	1.	-	-	3	3.	1	1.	97
Long Island College	12	24.6	10	22.2	6	13.5	4	8.8	4	8.8	6	13.5	2	4.4	1	2.2	45
Mount Sinai	13	39.4	14	36.6	1	2.6	1	2.6	1	2.6	2	5.2	4	10.5	-	-	38
New York Hospital	10	19.2	4	7.6	14	26.9	3	5.7	1	1.9	2	3.8	10	18.6	1	1.9	32
New York Dispensary	6	15.	10	25.	17	42.5	-	-	-	-	-	-	7	17.5	-	-	40
Northeastern	27	52.9	19	37.5	8	15.6	-	-	-	-	-	-	9	17.6	3	5.8	61
Poor Graduate	2	3.4	13	18.9	9	13.0	1	1.7	5	6.8	1	1.7	24	34.3	6	17.3	58
Presbyterian	10	14.	23	29.5	17	23.4	4	5.5	5	7.	2	2.8	10	14.	2	2.8	71
Roosevelt	10	35.7	3	7.1	3	7.1	4	9.7	6	11.8	3	7.1	9	21.4	-	-	42
St. Marks	17	36.1	13	27.6	1	2.1	2	4.3	-	-	3	6.3	9	17.3	3	6.3	47
St. Luke	6	12.2	13	26.5	12	24.4	9	18.3	4	8.1	1	2.	4	8.	2	4.	47
Stater Island	4	11.1	9	20.	12	25.3	10	21.7	-	-	-	-	-	-	1	2.7	39
University & Bellevue	5	8.4	12	20.3	10	17.4	1	1.6	3	5.	22	37.2	-	-	-	-	56
Wanderbilt	6	11.7	-	-	6	11.7	3	5.	5	9.6	3	5.6	23	45.	5	9.6	51
West Side	37	59.6	8	12.9	8	12.9	-	-	-	-	3	4.8	9	14.5	3	4.8	62
Whitman Hospital	8	20.	3	7.5	4	10.	9	22.5	2	5.	2	5.	10	20.	-	-	40
Woman's Maternity	7	29.1	4	16.5	6	24.	1	4.1	1	4.1	-	-	1	4.1	1	4.1	24
W. Y. Synagogue	14	23.7	14	23.7	17	27.4	-	-	1	1.6	3	4.8	11	17.7	2	3.2	62
Woman's Maternity	3	6.1	3	6.1	9	18.3	6	12.5	6	12.5	8	16.5	3	10.2	7	14.1	49
Woman's	2	3.1	12	18.7	14	21.8	10	15.6	3	4.7	3	4.7	15	23.4	8	12.6	74
Herman Knapp Memorial	15	25.6	3	4.8	9	14.5	10	16.1	3	4.8	-	-	21	33.8	1	1.6	62
Manhattan Eye & Ear Hospital	6	11.8	1	1.6	10	16.9	9	14.5	3	4.8	6	11.8	37	58.1	1	1.6	55
N.Y. Eye & Ear Infirmary	5	8.	15	24.1	9	14.5	-	-	1	1.6	3	4.8	26	41.9	1	1.6	62
Hospital for Ruptured and Crippled	-	-	2	3.9	8	13.3	5	8.1	5	8.1	-	-	31	50.8	1	1.6	52
N. Y. Orthopedic	2	3.2	3	4.8	4	6.2	13	21.3	5	8.1	-	-	32	50.4	2	3.2	61
Neurological	6	8.	1	1.6	4	6.2	12	20.	2	3.2	-	-	3	4.8	-	-	40
N.Y. Skin & Cancer	4	5.8	5	7.5	6	9.6	6	9.6	3	4.8	1	1.6	15	23.4	6	9.6	48
TOTAL	89	24.3	346	17.6	317	16.3	144	7.8	66	4.3	65	3,343	122.5	79	4.	-	1408

## LAW FOR THE DOCTOR\*

By LESLIE CHILDS, Attorney at Law, Greenfield, Ind.

## Liability for Performing Unauthorized Autopsy.

A CERTAIN right of property in a corpse is recognized in law as belonging to the next of kin, or other person charged with the legal duty of burial; and the performing of an unauthorized autopsy has been uniformly held to be such a violation of this right as will give the aggrieved person a right of action for damages against the offender.

Generally speaking, then, before an autopsy may be lawfully performed, permission must be obtained of the next of kin or person in whom this right of property in the corpse is accorded. Exceptions to this rule are found in jurisdictions where by statute it is provided that under certain circumstances the coroner, board of health, or other officials may order an autopsy, in which case it follows, if the statute has been complied with, an autopsy may be performed without the consent of the next of kin, and free from liability, if done on the authority of the official or officials designated in the statute.

If the physician making the autopsy proposes to rely on the authority given him by an official, through a statute, he should, for his own protection, satisfy himself before performance that the statute has been strictly complied with. If this is not done, and it develops that the statute has not been followed, the physician may find himself placed in the unwilling rôle of a defendant at the hands of the next of kin.

A case illustrating this point, and the danger involved in assuming that a statute of this kind implies a right to perform an autopsy, was that of *Woods vs. Graham*, 140 Minn. 16, the facts being as follows:

Frances Woods brought an action for damages against Dr. Robert Graham, alleging that he had performed an unauthorized autopsy upon the body of her daughter. The doctor admitted performing the autopsy, without the plaintiff's knowledge or consent, and pleaded the following facts as a defense:

That at the time he was county physician for St. Louis County, and that he attended the daughter of the plaintiff, as a charity case, in her last illness. That after the girl's death, the undertaker in whose charge the body had been placed, applied to him for a medical certificate, as required by law, stating the cause of death; and that, in order to give this certificate, it was necessary to perform an autopsy to ascertain the cause of death.

It was further pleaded in defense, that the autopsy was performed in good faith, in a decent, scientific manner, no incisions being made that were not necessary to accomplish the purpose undertaken. The lower court held that this answer failed to state a defense, sustaining a demurrer thereto, and the doctor appealed to the Supreme Court. In passing on the record, in the light of the Minnesota statute, the Court among other things said:

It is conceded that plaintiff's consent to the autopsy was not obtained or asked for, and that she had no knowledge thereof until after the autopsy was performed. Defendant claims freedom from liability on the ground that it was necessary to have the autopsy in order to discover the cause of death and be able to give the certificate required by Gen. Stat. 1913, Sec. 4652. This section requires the undertaker to obtain and file a medical certificate subscribed by the attending physician stating the disease or injury causing death, with contributory cause or complication, etc. Section 4654 provides that a burial permit shall not be issued except upon the filing of a proper

\*The fourteenth of a series of articles on "Law for the Doctor," written for MODERN MEDICINE by Leslie Childs.

was chiefly guided by whether or not they were improving, and also because of the fact that the questions had been asked at the dispensary, where the patient did not feel free to express an opinion, the information gathered is not of particular value.

Of the 39 who complained about the treatment, 12 are native born, 17 Hebrews, 3 Italians, 3 Germans, 1 Slav, 1 Negro, and 2 belong to the miscellaneous group of nationalities in our classification. Of the 45 who were in doubt about the value of the treatment received, 5 were native born, 10 Italians, 17 Hebrews, 4 Irish, 1 Slav, 2 Germans, 3 Negroes, and 3 of the miscellaneous group.

Classifying the expression of opinion by types of dis-

	Under One-half Mile		From One-half to One Mile		From One to Two Miles		From Two to Three Miles		From Three to Four Miles		From Four to Five Miles		Over Five Miles		Not Found at Address		Total
	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	
Hospital	313	38.1	179	21.5	140	16.9	44	5.3	25	3.	17	2.	80	9.7	29	3.5	826
Independent	73	38.8	38	31.	25	13.7	4	2.2	1	.6	4	3.2	30	16.8	-	-	181
College	38	11.1	63	20.	60	19.1	13	4.1	24	7.8	14	4.4	91	29.3	14	4.4	314
Total	419	31.7	380	21.2	325	17.	61	4.6	30	3.7	35	3.6	201	15.5	50	3.7	1321
Special	70	10.8	66	10.3	92	14.3	62	12.8	35	5.4	30	4.6	342	37.4	29	4.6	647
GRAND TOTAL	489	24.9	346	17.6	317	16.1	144	7.3	65	4.3	65	3.3	443	22.5	79	4.	1968

pensaries, we found that the largest number of commendation was given by the patients in the institutions devoted to the treatment of special diseases. In those institutions 90 per cent of the patients who were willing to express an opinion considered the treatment given as satisfactory, while in the general dispensaries only 85.9 per cent of the patients disposed to express an opinion considered the treatment good, and in the medical school dispensaries only 81 per cent found it satisfactory. Adequacy is not to be regarded as contingent upon such approval.

certificate of death. Section 4658 provides that no body shall be interred until a proper certificate of death has been filed and a permit issued. Section 4662 provides that any person willfully refusing to perform any duties imposed by the act is guilty of a misdemeanor.

The sections of the statute referred to do not in terms authorize an autopsy to ascertain the cause of death, and we are unable to hold that they authorize it by implication. . . . Gen. Stat. 1913, Sec. 8745, makes it a gross misdemeanor to dissect the dead body of a human being, except in cases "specially provided by statute," or where the direction or will of the deceased authorizes it, or where the coroner authorizes it, or where the "husband, wife, or next of kin, charged by law with the duty of burial, shall authorize dissection for the purpose of ascertaining the cause of death, and then only to the extent so authorized."

It cannot be held that this was a case "specially provided by statute"; as stated, defendant admits that the mother, who was the next of kin, did not authorize dissection to ascertain the cause of death.

The Court thereupon held that the lower court was right in sustaining the demurrer to the answer filed by the doctor. Holding in effect that on the record he was liable in damages for the autopsy performed.

### OBSTETRICS AND ANESTHESIA

The National Anesthesia Research Society has issued a "Monograph on Obstetrics and Anesthesia." In its first monograph it gives the historical evolution of nitrous oxid analgesia and anesthesia in obstetrics; the effects of civilization on childbearing women, and the failure of anesthesia and antiseptics to decrease obstetrical morbidity; the study of H. C. Davis in the relative toxicity and efficiency of chloroform, ether and nitrous oxid; Levy's views on chloroform fibrillation and its dangers; and blood changes under anesthesia and analgesia. Pointers are given in the administration of analgesia of anesthesia and statistical analysis of Davis' results, together with a discussion of operation during pregnancy.

### MOTHER AND CHILD

The December issue of *Mother and Child* contains a statement of Herbert Hoover, president-elect of the American Child Hygiene Association, on his program for American children. The most practical step yet evolved has been the creation of the community nurse, with the stimulus thus given to community interest in the problems of childbirth and infant care. He sees no less reason why the local governments should not support a staff of community nurses than that they should support a staff of policemen. He expresses himself as definitely in favor of clinical examinations and reports to parents as a fixed part of school work. We cannot, as a nation, rely for the upbuilding of the race upon the initiative of the parents alone, and the physical development of the child must be considered of equal importance with education and carried along parallel with it.

An interesting report comes from Dr. Chester L. Carlisle of a popular educational campaign on child hygiene in Oregon, preliminary to proposed legislation to provide medical and surgical treatment for sick and deformed indigent children, under the supervision of the medical department of the University of Oregon.

The university at the request of the legislature has, without funds, concluded a survey in all fields of mental, social, and child hygiene. Many interesting sidelights on community needs have been unearthed, and in this way remedies are made possible for conditions which are peculiarly of social significance.

Final analysis has not been made of all the material gathered, but the activities stand out as the most ex-

tensive undertaking handled in this matter, and, when completed, will present all essential facts on mental defect, delinquency, and dependency as found in Oregon's every day community life.

### SPECIALISTS IN OTO-LARYNGOLOGY

That a lack of proper special education on the part of those who claim to be specialists in oto-laryngology was at the bottom of the difficulty experienced by the Surgeon General in attempting to secure for the American Army a service in this specialty, is the finding of a committee appointed to look into this subject, representing the American Medical Association and all the societies in America who are connected with this specialty. The recommendations of the committee, just published, present as a minimum requirement:

(1) As a preliminary basis for special education in oto-laryngology, four years practice as a licensed practitioner, or one year's internship in a Class A general hospital.

(2) The standardized requirements as outlined in the Report carried out in the post-graduate department of a university, occupying the candidate from four to five hours daily for a period of six to nine months, the remaining portion of each day preferably to be spent in attendance on an out-patient clinic in oto-laryngology.

(3) Internship on this special service to be not less than sixteen months.

The Committee is representative, the work constructive, and is aimed to remedy a shortage which has appeared in this field. D. J. Gibb Wishart, of the University of Toronto, is chairman, and Thomas J. Harris, 104 East Fortieth Street, is secretary of the Committee.

### PUBLIC HEALTH IN CZECHO-SLOVAKIA

The International Health Board of the Rockefeller Foundation has announced a cooperative program in public health agreed upon with the government of Czecho-Slovakia, which includes the lending to the Czecho-Slovak government the services of an American competent in public health administration, fellowships for the training of a select group of young Czechs for service in the field of public health, cooperation in the development of a national public health laboratory service, and financing a Czech commission to study public health administration in the United States and England.

Nine medical representatives are pursuing courses in public health, hygiene and preventive medicine at this time and five members of the Commission from the Ministry of Hygiene of Czecho-Slovakia have recently arrived in America as guests of the Foundation. They are: Dr. Vladimir Basika, chief of the Medical and Sanitary Department of the Ministry of Public Health of Slovakia; Dr. Brhumil Vacik, general medical health director in Brno, Moravia; Dr. Ivan Halek, Member of Parliament and general medical director in Bratislava, Slovakia; Mr. Antonin Kolinsky, general director of administration and finance in the Ministry of Public Health, Praha; and Dr. Vladimir Petrik, medical health inspector in Bratislava, Slovakia. Their tour will include visits to Baltimore and Washington, scenes of rural health work in North Carolina, and Boston, Albany, Saranac, Toronto, Chicago, and Columbus.

A third factor in promoting human wellbeing and human good is health—health, individual and health, social or community.—James H. Harris.



## PROTECTION FOR DRUG USERS

**S**PECIFIC action in a given disease has been demonstrated for comparatively few drugs. The man of science is always observant of the way in which drugs influence the vital processes. It is to him of the utmost importance that the drugs he uses be certified as to strength, age, and purity; for uncertainty in such essential matters not only spells defeat in the individual case under treatment but renders valueless the most painstaking observation on all scientific aspects of the question. It is for this reason that so much effort has been made to regulate by statute the vending of drugs, and to provide by inspection against adulteration or their deterioration on the shelves.

The layman is more credulous as to the diverse curative properties of drugs and is more prone to accept adulterated products from vendors of drugs and to indulge in the use of patent nostrums for self diagnosed diseases—a



Keystone View Company.

The learned druggist on the corner does not escape the drug inspector sent out by the Board of Health. The food drugs in the 2,600 drug stores in New York City are examined regularly by inspectors to see that they are unadulterated and fit for medicinal purposes.

practice which in a more enlightened era will be prevented by law.

The subject of supervising drugs as to their proper labeling and purity, patent medicine as to extravagant claims, and of package goods for deteriorations, is the proper concern of health boards everywhere. Men who have made life long studies of the subject are the only ones who are in a position to give trustworthy advice as to distributing and dispensing drugs.

The control of drugs, therefore, becomes an important public health problem. Their inspections become a national work with official recognition, thus affording protection for the exacting physician, safeguarding the unintelligent self-administration of drugs by the layman, and saving from himself the helpless narcotic addict.

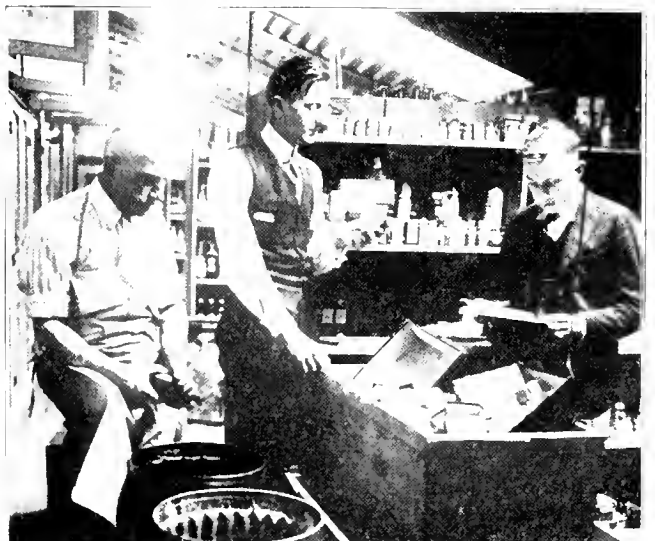
Perhaps the chief advantage of the systematic supervision of drugs lies in the direction of the control of patent nostrums. The man of science has a reasonable margin of safety. What he does not know of recent laboratory tests he is in a position to learn, and he is further



Keystone View Company.

Even the patent medicine users are protected by the Board of Health. Drug inspectors make constant examinations of the shelves of druggists to find patent medicines in which extravagant claims are being made—and these medicines are weeded out.

safeguarded in not expecting too much of drugs, per se, as the remedy for human ills. The person who readily accepts the large promises of the patent medicine man is the chief beneficiary of a system of inspection which has taken off of the market many harmful, often habit forming drugs that masked themselves as cures. A further step in the direction of the relief of the evils of self-medication would be in the dissemination on a large scale of information on abuses of this kind, and of what may reasonably be expected of drugs, and what drugs are safe in the hands of the general public. Prevention rather than cure should be the popular slogan. S. P. M.



Keystone View Company.

This Committee appointed by the Commissioner of Internal Revenue is segregating the narcotic drugs sent in from the various government offices. The unopened and original packages are turned over to the Public Health Service for use in Government hospitals. Broken packages and adulterated drugs are destroyed. Approximately one million dollars worth of drugs have been sent into Washington during the past year.



## RADIUM IN THE SAFETY MOVEMENT

The Radium Information Service of New York has recently issued a statement concerning the use of radium as a new element in the safety movement. "Radium's rôle in industry as a life saver is less spectacular but perhaps even more important than it is as a therapeutic agent," says the statement.

The great mass of accidents in factories, in mines and in other industrial institutions where darkness is a creator of danger, are being eliminated through the newest invention of science—radium luminous material. Radium illuminated watches are familiar articles. The same material that illuminates these is now being employed in great factories on all power line switches where fumbling might mean electrocution to the operator.

High pressure gauges, which are installed as an insurance against dangers, are deprived of a great deal of their safety value through inconstant lighting. Their dependability as indicators is increased tremendously through making them safe twenty-four hours a day by the application of radium luminous material, which is invariably luminous in the dark. Steam gauges and water gauges of all sorts are making use of radium to increase safety.

Electric switches are often set in places which are unlit. This includes electric lighting equipment which is usually visible only after the light it controls has been turned on. A spot of radium luminous material on the bottom or switch makes them easily located in the dark, so that in emergency they may quickly be made use of.

Likewise, a fire alarm or a fire extinguisher is deprived of much of its efficiency through being invisible in the dark. Radium luminous material acts as a quick locator for them. Telephones, which are often necessarily found quickly in the dark in emergencies, various emergency call bells, and revolvers are made more useful through the application of undark. Gun sights, illuminated, insure accuracy of aim in the dark. The need of luminating poison bottles, so that they may stand out warningly in the dark has been demonstrated too often to need further dwelling on. An interesting safety device is the safe combination whose dial is radium luminated, so that no artificial light need be used for it.

The industrial uses of radium luminous material are many. Bolts that are necessarily attached to the dark under portions of machines and equipment are being touched with dabs of this luminous material, with a consequent great saving of bloodshed. In mines where the carrying of oil lamps or the placing of electric lighting equipment is not feasible, radium has been found to be a boon to humanity. There are dark corners in the dark underground channels which miners must traverse, corners where danger lurks—these are made safe through the unvarying luminosity of radium.

The value of radium to mariners is commencing to be recognized. Not only the compass dials, but the steering wheels, the gauges, and other instruments which should be instantly and uninterruptedly visible have been touched with radium. Motorists, motorcyclists, and the operators of any machinery which has indicating dials, or gauges which tell of the speed of the motor or the quantity and mixture of fuels and oils, are finding the solution of their difficulties in radium luminous material. The hazard and uncertainty has been reduced.

While radium is the most valuable element in the world—a gram of radium, which is about a thimbleful, costs \$120,000, as opposed to \$150 for an ounce of platinum—so powerful is it when mixed with other materials that

even the minutest particle is effective in making material self-luminous for years. It is this quality which makes radium luminous material commercially possible.

The great value of radium is due to its scarcity, and to the great difficulty in isolating it after it has been found. Much of the radium of the world is now found in America, in carnotite fields. A great portion of this comes from the Undark Radium mines in the Paradox Valley of Colorado.

The ore is found in narrow seams in the ground. It is sorted and packed in one hundred pound sacks and transported sixty miles to the nearest railroad station on the backs of burros and mules. Thence it is shipped in carload lots 2,900 miles across the continent to an extraction plant in Orange, N. J.

The power of radium lies in the penetrating character of its rays, which disintegrate and travel at the rate of three thousand miles a quarter of a second.

In addition to the use of radium luminous material on machinery in industrial plants, it is used extensively for the marking of any corner or spot which should be visible in the dark. Angles of tables and chairs, corners in rooms, numbers to indicate cubby holes or doorways on which there is no other illumination are touched with a spot of undark. Even the valuable electric torch increases its efficiency when it has a touch of radium on it so that it can be reached instantly in an emergency in the dark.

When other lights fail, when fuses blow out, wires break down—radium will glow dependably without danger of explosion or of burning.

The employment of radium to help solve our medical and industrial problems of life safety is as yet in the first stages of its development. What the future will bring no one knows.

## THE SUBNORMAL IN INDUSTRY

The significance of Joseph Choate's statement that "the trouble with the feeble-minded is that there are so many of us," is appreciated when, according to United States Army figures, the estimated number of feeble-minded in the United States would run over half a million,—an aggregate so large that it is apparent the state can never adequately care for its feeble-minded until there is a definite state policy looking toward their self-support.

A recent bulletin of the New York State Industrial Commission reports on the success of the experiment in rendering feeble-minded workers self-supporting while they are segregated there under supervision at Oriskany Falls, N. Y. From the Sonoma State Home in Eldridge, Cal., has come the only experiment reported which derives an efficiency quotient for such subnormal workers. The average earning capacity of four groups is 46, 55.9, 65.0, and 72.0 per cent, respectively, as compared to normal workers.

The introduction of subnormal workers into industrial life must be scrutinized, according to the New York recommendation, from the following viewpoints: (1) The welfare of the girls themselves; (2) the effect on their fellow workers; (3) the relationship of such plans to the interest of the public in the extinction of the moron type.

They conclude that it is open to question whether the state should adopt a permanent policy of placing workers known to be subnormal in private industries to compete with normal industrial workers. The problem of rendering the fundamentally irresponsible self-supporting must somehow be made compatible with the interest of normal workers and of society as a whole.

### FATIGUE IN THE BOOT INDUSTRY

A preliminary note has been issued in Report No. 10 of the Industrial Fatigue Research Board of England on output data as related to fatigue in the boot industry. Daily reports were compared of individual members of working groups and the conclusions based upon them.

Where two or more records are available for the same operation, the more highly skilled operative has a more regular graph and shows less inclination to fall off toward the end of the week than the operative with a lower average output. . . . Where a workman is comparatively unskilled or ill suited to his job, his output curve tends to be irregular or to drop as the week passes, whereas the skilled operative, employed on congenial work, shows a curve approaching more nearly to the ideal of a rise throughout the week.

The last section of the report records a short experiment with rest pauses, in which two of a team of three women operatives employed in the press room worked forty minutes, while one rested twenty minutes and then replaced one of the workers. Thus each operative was only actively employed for about thirty hours a week instead of forty-six. A considerable increase of output was obtained, the increase resulting more from the comparatively unskilled and less robust workers, who would naturally be more liable to fatigue, than from those whose output was high before the rest pauses were instituted. The experiment proved to the advantage both of employees and employers. The employers increased the output per machine by roughly fifty per cent; the number of accidents was sensibly reduced, and the employees were contented, declaring that they were less tired and in better health.

### WORKMEN'S COMPENSATION AND DISPENSARIES

A conference was recently called in Rhode Island between a committee representing the State Board of Charities, representatives of insurance companies, and the superintendents of a number of dispensaries recently to discuss the charge that contracts or at least understandings had been entered into between insurance companies dealing in workmen's compensation and the management of certain dispensaries whereby injured workmen are treated gratis by the medical staff of the dispensaries, the insurance being collected by dispensaries to the detriment of physicians.

The point of view expressed by each member of the conference is varied and of great interest, as reported by the *Long Island Medical Journal*. The insurance companies maintained that their one care was to obtain the best form of treatment for their injured insured; that often the ordinary family physician was not available or was not versed in compensation requirements, or lacked the necessary training or the requisite office equipment. They denied that contracts had been entered into with dispensaries, but ventured the opinion that a well equipped dispensary offered treatment for an injured man that might make it worth while to establish a definite relationship. The superintendents of several large dispensaries acknowledged that they had regularly accepted compensation cases for treatment in their clinics. The objection on the part of physicians represented held that unjust discrimination is caused by working agreements between dispensaries and insurance companies.

In commenting on the matter, the *Journal* emphasizes the trend of modern institutional work to provide opportunities in a more generous spirit for all classes of society

and cautions the physician that he must "study how to keep in the van of progress at the same time that he guards himself from commercial imposition." They suggest that it might be worth while to abrogate entirely the arbitrary definition of what constitutes a charity patient and to accept all out-patient applicants on a graded fee schedule, while the dispensary physician receives a salary. Such a plan has been tried and it seems susceptible of adjustment until it may be made to meet the needs of the profession and public alike. There must be a readjustment of all three parties to meet the situation, and the suggestion of a graded pay clinic, carefully controlled, with an efficient investigative department to check up on the inevitable unworthy applicant, seems to offer a means to meet the just claims of all parties—patient, doctor, dispensary, and insurance company.

### TREND OF WORKMEN'S COMPENSATION

An article contributed by Will J. French, in the November issue of the *Monthly Labor Review*, summarizes compensation history, past and present. The most important recent legislative development of workmen's compensation legislation is in extending the benefits of compensation acts to include vocational re-education and rehabilitation of men disabled in industry. Without waiting for the Federal Industrial Rehabilitation Act, a number of states have proceeded independently to provide re-education for injured workers. Some tendency is noted toward more compulsory and monopolistic state funds. This is, of course, resisted bitterly by stock and other private insurance carriers. The fact that child labor is excluded from compensation Mr. French regards as without reason, and thinks that all laws which are limited to extra-hazardous and hazardous occupations should be extended to all industrial occupations without regard to extent of hazard.

### A STRONG BRIEF FOR VIVISECTION

Were it not for its unfortunate name, vivisection would have less need of explaining from time to time the necessity for its existence, according to the *Boston Transcript* in commenting on a series of lectures at Georgetown University, brought out under the editorship of Francis A. Tondorf, S.J., Ph.D. Vivisection may at one time have been the fulfillment of its name, but it has moved upwards into animal experimentation on which is based the whole fabric of modern medicine and surgery and has been a means towards the enormous improvement in the "expectation of life" of the whole civilized world.

At the Georgetown University of Medicine during the present year more than a dozen distinguished authorities of the country were invited to deliver lectures in vindication of vivisection. Among the speakers in the symposium were Simon Flexner, M.D., Sc.D., who detailed experiments with animals which directly benefited all classes of men; William H. Arthur, M.D., Col., U. S. A., on laboratories; George Tully Vaughan, M.D., on cerebral surgery and other difficult operations which have been rendered surgically safe; W. W. Keane, on modern antiseptic methods which have revolutionized abdominal surgery, eliminated lockjaw, and have reduced the death rate from compound fractures from 66 per cent to less than 1 per cent; and Maj. George B. Foster, M.D., Dr.P.H., who recounted the incontrovertible accomplishments of the Army Medical Corps. The whole present achievement and the best promise of the future may be claimed as a just result of utilizing the study of animals and bacteria by watchful investigators who have been interpreting their reactions for the benefit of the human race.

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## BOOKS OF THE MONTH

### Comment on Current Medical and Health Literature and Announcements of New Books

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#### AN ATLAS OF THE PRIMARY AND CUTANEOUS LESIONS OF ACQUIRED SYPHILIS IN THE MALE. By Charles F. White and W. Herbert Brown.<sup>1</sup>

The opportunity afforded the authors of seeing some 19,000 cases of syphilis in hospitals during the war afforded them a clinical material from which the illustrations of this atlas were made. The illustrations throughout are of the highest order. The colored plates and stereoscopic reproductions of photographs share equally in the merits of the publication. The legends thereto attached and the scant but clear cut reading material are both excellent and highly descriptive. The print throughout and the general physical characters of the book are of the highest order. Plate IV in Part V is undoubtedly the best illustration which has thus far come to the attention of the reviewer. This Atlas will be highly appreciated by all specialists in syphilology.

J. S. EISENSTAEDT.

#### THE OKLAHOMA HEALTH SURVEY, MUSKOGEE.

By M. P. Howard, M. S., and Jules Schevitz, B. S., Under the Auspices of the Oklahoma Tuberculosis Association, Oklahoma City, Okla.<sup>2</sup>

The health survey of Muskogee is the second of a series of eight complete and intensive health surveys of urban conditions in Oklahoma undertaken by the Oklahoma Tuberculosis Association as a preliminary step in a state-wide health campaign.

In each case the community has been so organized as to bring the exact status of the district under the immediate supervision of a Central Health Survey Committee composed of local citizens. The data reported were gathered in 1918, and the impetus given to the interest in health conditions has persisted.

Muskogee stands incriminated as to her health machinery and administration on several counts. Specific death rates are high, notwithstanding a system under which the reports of diseases are so incomplete and meager as to make it impossible to calculate the true death rates or to determine the nature and prevalence of disease in the community. An attempt to calculate the infant mortality rate brought out the fact that only from 42 to 48 per cent of births are recorded. The model vital statistics law is not adhered to.

Quoting from the comment of the report on city budgets, "the city budgets for 1917 and 1918 show that the appropriations for health work was \$0.19 *per capita* in 1917 and \$0.14 *per capita* in 1918. This amount is unusually small, since the minimum appropriation for health work is estimated to be 50 cents *per capita*. The appropriation becomes even more insignificant when the items for which the money is spent are reviewed. A much smaller *per capita* appropriation is available for

preventing disease. The study brings out the fact that the expenditures for all the important municipal activities are many times as large as those for health work. More money is being spent for the care of the cemeteries than for the prevention of disease."

Water supplies, sewage disposal, housing—all call for scientific supervision.

The Oklahoma Association is to be commended for its enterprise, and the authors of this report for their methods and exhaustive analysis of the material collected.

#### STUDIES IN NEUROLOGY. By Henry Head, M. D., F. R. S., in conjunction with W. H. R. Rivers, M. D., F. R. S., Gordon Holmes, M. D., C. M. G., James Sherren, F. R. C. S., Theodore Thompson, M. D., and George Riddoch, M. D., Volumes I and II.<sup>3</sup>

These volumes consist mainly of a republication of a number of papers published by Head and his co-workers in *Brain* over a period of time extending from 1905 to 1918. No material change has been made in their arrangement. Each of these papers contain an account of the methods in testing sensation. These have been excised and a fresh chapter in which they are combined has been added. In introduction and an epilogue dealing with the common aims which underlie these various researches have been added. Finally, in the interest of clearing up some of the moot questions in neurological research, some of the most serious criticisms of their researches have been considered in an appendix.

The first volume is devoted to the peripheral nervous system. The profound studies here described resulted in a new conception of the physiology of sensation which has been widely accepted. Head, Rivers, and Sherren concluded that the sensory mechanism in the peripheral nerves consists of three systems: deep sensibility, protopathic sensibility, and epicritic sensibility.

The second volume is devoted to grouping of afferent impulses sensory disturbances from cerebral lesions and observations upon gross injuries of the spinal cord. After showing that afferent impulses which reach the central nervous system by way of the peripheral nerves undergo rearrangement within the spinal cord, they attempt to trace their course upward, indicating the relation of each set of impulses to the other. They complete their observations with exhaustive studies upon cerebral cortex and sensation.

The case reports are complete and the illustrations profuse. The volumes will be of great interest to neurologists, other clinicians, and physiologists. The collection of their valuable and separate studies into one accessible place is particularly timely, associated as it is with the reawakened interest in sensation due to the casualties of the late war.

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1. John Bale, Sons & Danielson, Ltd., London, 1920.  
2. Oklahoma Tuberculosis Assn., Oklahoma City, 1919.

3. Oxford University Press, New York, 1920.

**THE OXFORD MEDICINE.** By Various Authors. Edited by Henry A. Christian, A.M., M.D., Hersey professor of the theory and practice of physic, Harvard University; physician-in-chief to the Peter Bent Brigham Hospital, Boston, Mass.; and Sir James Mackenzie, M.D., F.R.C.P., LL.D., F.R.S., consulting physician to the London Hospital and director of the Clinical Institute, St Andrews, Scotland. Volume II, diseases of bronchi, lungs, mediastinum, heart, arteries, and blood.<sup>4</sup>

This second volume lives up to the expectations produced by the first. The articles are all good, the presentation clear—at times brilliant. The bibliographies are extensive; the volume on the whole is a well rounded and authoritative treatise on diseases of the bronchi, lungs, mediastinum, circulation and blood. We know of none better.

**MANUAL OF BACTERIOLOGY AND PATHOLOGY FOR NURSES.** By Jay G. Roberts, Ph.G., M.D., Oskaloosa, Iowa. Third revised edition.<sup>5</sup>

An admirable little textbook covering both bacteriology and pathology in a concise manner. Its chief virtue is brevity, containing about all a student nurse should know about the subjects treated, without confusing her mind with a lot of unessential detail.

**PLASTIC SURGERY OF THE FACE.** Based on Selected Cases of War Injuries of the Face, Including Burns, with original illustrations. By H. D. Gillies. With chapter on the prosthetic problems of plastic surgery by Capt. W. Kelsey Fry, M.C., R.A.M.C.; and remarks on anesthesia by Capt. R. Wade, R.A.M.C.<sup>6</sup>

Those who were fortunate enough to hear H. D. Gillies present his paper before the Clinical Congress of the American College of Surgeons in New York in October, 1919, or who have followed his work will have anticipated the excellence of his book on plastic surgery of the face. To those who do not know of him a few remarks regarding his qualifications for writing such a book might be opportune. In 1915, while serving with the Red Cross in France, Dr. Gillies conceived the idea of devoting a hospital to the treatment of face wounds, and with this in view he was assigned a small ward in the Cambridge Hospital at Aldershot, England. Before very long more beds were needed, Aldershot could not be expanded and in 1917 a 320 bed hospital was established at Sidcup. By the end of the war the capacity had reached 530 beds, plus auxiliary units totaling several hundred beds more. In this hospital, with its thousands of admissions, Major Gillies worked, devising and perfecting operations to restore as nearly as possible to normal, functionally and cosmetically, the horrible battle wounds of the face. This experience, gained by innumerable painstaking endeavors and by prolonged post-operative observations, he has recorded clearly and concisely in this book.

The text is elaborately illustrated with diagrams and photographs which depict the various stages of operation and healing and the final results. The first chapter, on the Principles of Plastic Surgery, sets forth the fundamental essentials of plastic surgery. It tells what preliminary treatment is necessary, how to plan the repair, what tissues can be used to replace mucous membrane, skin, supporting tissue, how to determine whether sufficient blood supply be present, how much tension or torsion a flap can stand, where Thiersch, Wolfe or pedicle flaps are most efficient, etc. With the same painstaking care the repair of injuries to various parts of the face are described, Chapter 2 dealing with repair of the cheek, Chapter 3 with repair of the upper lip, Chapter 6 repair of

injuries to the nose, etc. Except perhaps in work on fractures, there is no subdivision of war surgery in which the principles learned can so readily and with so little change be transplanted to civil life as in the case of plastic face surgery. In the final pages of the book Gillies deals with this phase of the subject, indicating in brief where and how the methods described in the previous chapters are applicable in a civil community. A careful index enhances the value of the work as a reference book.

Gillies' Plastic Surgery of the Face rightfully deserves a place of pre-eminence among recent surgical works.

**CREATIVE CHEMISTRY. Descriptive of Recent Achievements in the Chemical Industries.** By Edwin E. Slosson, M. S., Ph. D., literary editor of *The Independent*, associate in Columbia School of Journalism. Author of "Great American Universities," "Major Prophets of Today," etc.<sup>7</sup>

The recent war, states Stieglitz in an introductory chapter to this volume, as never before in the history of the world, has brought all nations to a realization of the vital place which the science of chemistry holds in the development of the resources of a nation. This most important fact, it seems, is not fully appreciated by the general public. Its generous and intelligent support, however, is indispensable if the more recent achievements of industrial chemistry shall be preserved, and the hoped for results of further chemical research be obtained. The interest of the public must be awakened, and there probably is in this country no other scientist better equipped to accomplish this feat than Slosson, the author of this new volume. He brings home to his readers some of the great results of chemical activity and discusses some of those big problems which must continue to engage the attention of the chemists. The story of creative chemistry is told in a most captivating style. Chemical formulas, figures, and statistics, like the less palatable but essential ingredients of a powerful medicine, are well dissolved in a pleasant vehicle of fluent diction, tastefully flavored with cheerful criticism, and here and there even a quotation from poetry. But also in this unique and attractive disguise this remains a serious and truly scientific treatise with many references for collateral reading, a work easily perused and destined to achieve its purpose of arousing widespread interest in the science of chemistry.

**THE LIFE AND WORK OF SIR JAGADIS C. BOSE,** M. A., D. Sc., LL. D., F. R. S., C. I. E., C. S. I., emeritus professor, Presidency College Calcutta, director of the Bose Research Institute. By Patrick Geddes, late professor of botany (Univ. Coll., Dundee), St. Andrews University, and professor of sociology and civics, University of Bombay.<sup>8</sup>

Some books impress you by their mere title, and no matter how critical you would like to be after that you cannot free yourself from your first impression. To this type of books belongs the one before us. The book makes a splendid impression by its title, contents, and photographs. As one reads he finds the first impression to be correct. It is a biography of Professor Bose, an Indian scientist, but the author has sketched in the book the life of the people in India, the struggle of a man who in the midst of a primitive culture becomes interested in scientific research, and the workings of an institute of learning in the far East. The book removes one from European and American civilization and gives an insight to a primitive and a natural culture. It is refreshing and instructive.

4. Oxford University Press, New York, 1920.

5. W. B. Saunders Co., Philadelphia and London, 1920.

6. Oxford University Press.

7. The Century Co., New York, 1920.

8. Longmans Green & Co., New York, 1920.

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## BOOKS OF THE MONTH

(Continued from page 69)

**HYGIENE AND SANITATION.** By Seneca Egbert, A.M.,<sup>9</sup> M.D., professor of hygiene, University of Pennsylvania.<sup>8</sup>

This is a revised edition of a useful textbook along conventional lines. Out of a total of 538 pages comprising the book, 31 are devoted to air, 82 to water, 47 to food, 31 to the examination of air, water and food, 50 to disinfection and quarantine, while only 15 are given over to industrial hygiene and occupational diseases. Professor Egbert does not discuss the administrative, social, economic, and educational phases of public health and the bibliography referred to in the footnotes is very limited, many important recent studies in the various fields not being mentioned.

The author is enthusiastic with regard to his chosen field. In the introductory chapter he makes a plea to the medical fraternity for a more active interest in sanitation on their part and musters several arguments for the support of his thesis, one of which is strikingly persuasive: "Health means ability to work and to earn good wages" and "good wages insure prompt and willing payment of the doctor's bills." The author is evidently a strong believer in the "economic interpretation of history."

E. H. L. C.

**THE WOMAN OF THE STREETS.** By Lee Alexander Stone, M.D., Major, M. C., U. S. R.<sup>10</sup>

The complex problem of prostitution has been discussed too often and too exhaustively to permit any writer to present in a small volume any entirely new information. However, it is possible to give known facts, which for various reasons customarily are suppressed, in such form that they bring home forcibly an opinion, which though at variance with common views, still is entirely feasible. This task has been ably performed by the author of this book. The question of prostitution so far has withstood all the multifarious attempts of a final solution. It can not be denied that the suggestions for a solution offered by Stone in this well written and easily readable volume are as acceptable as many propounded and then proved unsuccessful in the past. They at least impress the reader with their eminent sanity.

**MASSAGE AND EXERCISES COMBINED.** A Permanent Physical Culture Course for Men, Women and Children. By Albrecht Jensen.<sup>11</sup>

The value of calisthenics is obvious. Its power to build up the human body has been most forcibly demonstrated in the army. Whether there is any special value in this or any other "new system" is rather doubtful. It reminds one of some of the complicated "stunts" some enthusiasts tried to introduce into the army. Calisthenics are now on a rational basis and it seems that the addition of a sort of pseud-massage only complicates an otherwise simple matter, without adding materially to its usefulness.

**A MANUAL OF PATHOLOGY.** By Guthrie McConnell, M.D.<sup>12</sup>

In a general way this is a satisfactory manual of pathology. The book is well arranged and the illustrations are quite good. A number of subjects are not very well treated, among these being the following:

The subject of focal infections; endothelioma; and the question of the etiology of poliomyelitis.

The impression is that the attempt is made to make the book too comprehensive by including bacteriology.

9. Lea & Febiger, Philadelphia, 1919.

10. Burton Publishing Co., Kansas City, Mo., 1919.

11. Albrecht Jensen, New York, 1920.

12. W. B. Saunders Company, Philadelphia, 1920.

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# MODERN MEDICINE

A Monthly Magazine of Medical & Health Progress for Physicians  
& for Others Interested in Administrative, Industrial  
& Social Health Problems

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*Editors, ALEXANDER LAMBERT, M. D., S. S. GOLDWATER, M. D., and JOHN A. LAPP, LL.D.*

*Managing Editor, JOHN A. LAPP*

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## PROLIFIC HEALTH LEGISLATION

THE legislatures of forty-three states are in regular session during this year. Only five states—Louisiana, Kentucky, Virginia, Mississippi, and Maryland—do not have regular sessions in the odd numbered years. There are indications that the year will be prolific in health and welfare legislation. The people of the states have had time to consider many of the weaknesses disclosed during the period of war stress and, although there will be apparently general approval of economy without strict regard to need, it is probable that many good measures will pass.

The field which is especially promising for legislation is that of child welfare. A number of official and unofficial commissions are reporting well rounded programs for the health and moral welfare of children. The subject of maternity care will also receive much attention, following the favorable action by the Congress of the United States. State health laws will be due for normal advance; research work will be given special impetus in the state universities; disabled civilians will be aided by legislation to meet the conditions of the Federal Act for the rehabilitation of cripples. Health center bills are being promoted in several states. Workmen's compensation, including more adequate medical care, will be considered throughout the country. The defeat by referendum of the anti-vaccination and anti-vivisection bills on the Pacific Coast, will doubtless serve as a warning to public health marauders. Limited practice bills providing for special boards for chiropractors, naturopaths, will doubtless be introduced in many states; but there are evidences, such as the defeat of the chiropractor bill in California, to encourage those who have been fighting to observe medical standards.

MODERN MEDICINE will at as early a date as practicable publish a complete and analytical review of health enactments during the sessions of 1920-21.

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## A SALLY AT PREVENTIVE MEDICINE

THE brilliant essayist, Mr. G. K. Chesterton, has been lecturing in the United States, and his wit has been emitting sparks. Among them was one which flew in the direction of the modern health movement. We do not doubt that his audience responded reprovably when he ridiculed the idea that the doctor should be the health officer of the community. For doctors as doctors, the lecturer said, he had profound respect; but he would knock their heads off if they undertook to make themselves advisers of the community. The doctor was to be called upon extraordinary occasions to deal with abnormal situations. Suppose he were to precipitate himself into the audience and break his leg. A doctor would set the leg. He would be doing his work as a doctor, but the modern idea seemed to be that he was to take charge of unbroken legs, to say when they were to be used to walk, and when they were to be used to dance.

"Take a policeman. He is there to punish crime," Mr. Chesterton continued. "When you and I indulge in murder, he takes charge of us and deals with us according to law. But just imagine what you would say if told that the policeman was there to encourage virtue. What would happen if you and I were always followed by a policeman, and we heard his voice over our shoulder telling us when to do this and not to do that? I think we should soon begin to look upon it as rather a bore.

"As a matter of fact, precisely this sort of thing



is messing its way into our extremely muddled politics. In England they have created a Ministry of Health—God knows why! In English cities, its agents are endured with the incredible politeness that is characteristic of the English poor. In Edinburgh and other places, where Scotchmen live, they are kicked downstairs. In Ireland they are not allowed at all."

This sally at modern preventive medicine and public health measures may amuse but it does not save lives. Everyone acquainted with modern health movements knows that the physicians and the health workers do not interfere with the liberties of people except where the liberty of one may mean disaster to another. Health regulations attempt to give babies and children a chance against the ignorance and indifference of parents. They prevent disease carriers from endangering the welfare of others. They require those who maintain a nuisance inimical to health to clean up. They prevent dependents from preventable causes from remaining dependent.

Preventive measures are necessary in every community and nowhere are they carried to such extremes as the wit of Mr. Chesterton indicates. Inadequate as are the health measures of this country today, they are responsible for the saving of at least a million and a half of lives which would be lost if the rampant individualism lauded by Mr. Chesterton prevailed.

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### WILLIAM T. SEDGWICK DIES

NEWS has just been received of the sudden death of Prof. William T. Sedgwick of the Massachusetts Institute of Technology. Dr. Sedgwick has been for many years one of the most outstanding figures in the field of public health as an authority on biology and sanitation, as a Technology official, and as a teacher in numerous scientific branches. He has during the past twenty-five years exerted a formative influence on public opinion in such matters and has been an inspiration to many of the foremost health workers in the United States today.

Professor Sedgwick was born at West Hartford, Conn., in 1855, graduated from Sheffield Scientific School in 1877, and taught for five years at Johns Hopkins. He had long been recognized by his associates as a leader in his branch of science, and had served as president of the American Society of Naturalists, on the Advisory Board of the Hygienic Health Laboratory of the United States, as president of the American Health Association and the Society of American Bacteriologists. Since 1897, as curator of Lowell Institute, he had arranged the famous Lowell lectures. Two of his books were "Principles of

Sanitary Science and Public Health" and "The Human Mechanism." A résumé of his views on the present needs of medical education was published in the January issue of MODERN MEDICINE.

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### POPULAR NOTIONS REGARDING PSYCHOLOGY

THE University of Iowa is striving to make its science reach the people instead of merely serving the mission of academic discipline. In line with this aim is a recent investigation by Donald A. Laird, reported in the *Journal of Abnormal Psychology*, to ascertain how accurate are the ideas of the man of the street with reference to the cardinal conceptions of abnormal psychology. For the purpose of this investigation Laird culled from important texts on psychology the topics most emphasized as of practical value and incorporated them into a questionnaire that the average individual might comprehend.

A surprisingly high percentage of returns was secured and an unbiased sampling of cases revealed the vagueness of the popular mind on these subjects. Out of 100 replies, 72 frankly admitted they did not have any idea as to the cause of dreams, 59 thought dreams have occasional prophetic import, and none was in any way acquainted with the wish fulfilling aspect of the dream. On the subject of hypnosis, 64 did not place any belief in the validity of the phenomenon, while 13 frankly called it a fake. Of the 36 who believed in hypnosis, 14 ascribed it to some "unknown" power, while the others thought it uncanny. Only 19 thought the account given of a typical hypnotic case of multiple personality possible. On the question regarding the subconscious only 12 replied in the affirmative, and these had only a vague concept of the subconscious.

When the questionnaire passed to occult manifestations, however, the tendency was in the other direction; 58 believed that the spirits of deceased persons live and can communicate with us, and all but two of the 58 believed that only certain persons have the power of getting in touch with the spirits of the departed. None of the group had read about hypnosis or multiple personality. Compare this meager amount of knowledge as to the processes of mentation with what was actually forced upon their attention in the Sunday supplements about occult phenomena! Wherefore the author recommends as useful the fertile field of semi-popular articles dealing with the several phases of psychology that will catch the eye and the mind of the man on the street and build fuller, more accurate concepts of mental science to replace injurious current notions regarding spiritualism and telepathy.

S. P. M.



## THE AMERICAN RED CROSS AND HEALTH\*

BY E. A. PETERSON, M.D., DIRECTOR OF HEALTH SERVICE, AND W. H. BROWN, M.D., ASSOCIATE DIRECTOR OF HEALTH SERVICE, WASHINGTON, D. C.

THE origin and development of the Red Cross idea is one of the most striking by-products of war. Called into being to meet the emergencies of the battlefield, it has grown to be a living organ of personal mercy the world over. The mercy thus enthroned in the heart of man has not confined its efforts to the dramatic needs of war, but has extended its ministrations to the equally pressing needs of peace. So today we have Red Cross societies in forty-one countries, with an International League of Red Cross Societies maintaining a permanent organization at Geneva. These organizations all have the common ideal of translating mercy into universal service for humanity everywhere.

The American Red Cross Society was born in 1881. This organization traces its ancestry back to the work of Florence Nightingale in the Crimea and the practical sympathy of a Swiss gentleman, M. Henri Dunant, on the battlefield of Solferino. Out of their unselfish devotion came a conference at Geneva to consider the foundation of an international society for the succor of the wounded. As a result of this conference in 1864, twelve of the most enlightened nations of the world signed the "Treaty of Geneva for the Relief of Sick and Wounded Soldiers." Our country was not able to enter this humanitarian agreement at this time.

### America in Organized Mercy

In this country the real precursor of the Red Cross was the United States Sanitary Commission. This was formed in 1861 with the motive of devising means of aiding the medical service of the army. An extra-governmental agency, it was at first not favorably regarded, though after some difficulties it was given recognition and



This picture depicts the homage of America's fighting men to American womanhood as mobilized for service in the World War by this organization. The face of the central figure is a composite of the features of one thousand Red Cross workers, officially selected for the purpose.

throughout the Civil War carried on health and relief work. At the close of the war, an attempt was made to form a permanent relief organization but, through lack of interest, this failed. In 1877 a message from the president of the International Red Cross to President Hays, urging the founding of an American Red Cross, was delivered by Miss Clara Barton, who had been active in nursing during the war. Finally, in 1882, through the energy and perseverance of Miss Barton, President Arthur signed the Geneva Treaty and it was confirmed by the Senate. This was the official recognition by our government of the principle of organized mercy.

Even after the adoption of the Red Cross system for the relief of the disasters of war, there was objection to perpetuating it on the ground that we had no wars and were not likely to have any. This seemingly unanswerable argument was met by pointing out the lack of any organized provision for meeting the constantly recurring disasters of peace, such as fire, floods, famine, and epidemic disease.

The further growth and development of the American Red Cross is an interesting story. Almost immediately it was called upon to perform service. Forest fires, floods, and famines occurred and relief had to be provided. Its first public health work came with the yellow fever epidemic of 1888 in Florida. A group of persons who had previously nursed yellow fever patients were gathered together under Red Cross auspices and sent to the places visited by this disease. Armenia was the next field for health work. In 1894, during one of the periodic disturbances between Moslems and Christians, a Red Cross expedition, after some difficulties, entered this Turkish province. Here it had to cope with four distinct epidemics:

\*The sixth of a series of articles on national health organizations appearing in successive issues of MODERN MEDICINE.

typhoid, typhus, dysentery, and smallpox. Cuba, in 1898, was the scene of horrible conditions. The Red Cross went there, opened hospitals, distributed supplies, and did what it could do to alleviate the sufferings of the unfortunate inhabitants.

At last, the American Red Cross was finally and permanently incorporated in 1905. The President of the United States became its president and the War Department its auditor. In its charter it was officially designated "To continue and carry on a system of national and international relief in time of peace and to apply the same in mitigating the sufferings caused by pestilence, famine, fire, floods, and other great national calamities, and to devise and carry on measures for preventing the same."

The years following its incorporation were years of unconscious preparation of the organization for the duties and responsibilities of the World War. During this time, the Red Cross accumulated experience in the handling of national and international disasters of all kinds, whether wars, floods, fires, famines, earthquakes, cyclones, or epidemics. In this article we are only interested in those activities which have a direct bearing on health problems. From the Town and Country Nursing Service has developed one of the most striking as well as one of the most useful contributions of the Red Cross in the field of health—the Red Cross public health nurse. From a little group of courageous pioneers, they have grown to almost 1,200 trained young women fighting disease and promoting health in 850 American communities. Supporting, supplementing, and assisting the constituted health authorities, they are acknowledged to be one of the indispensable parts of modern health machinery.

Health education soon became one of the major activities of the Red Cross. The courses in home hygiene and care of the sick have furnished 168,709 women and girls with fundamentals that will materially assist the physicians of our country in their battle with disease. In addition, the courses in food selection have had a very direct bearing on health. The first aid work of the Red Cross has placed definite and useful facts about accidents and their prevention in the hands of 16,000 persons within the last twenty months, while Red Cross life saving courses have prepared 2,817 men and women to meet emergencies in and on the water. The activities of this period furnished the Red Cross with a broad experience in cooperation with official and voluntary agencies, the working methods evolved developed a technic of enlisting and training personnel and a popular appeal to the public both as a teacher and as an avenue of service.

Then came the World War. In common with every good American organization the Red Cross expanded to meet our country's need. With its traditions of service and its training in organization, it mobilized for war and enlisted both the interest and funds of millions of our people. The story of this service can not be recorded here. We should point out, however, that the war led the Red Cross more positively and extensively into the health field.

### Extension in Health Field

At home, its chief health work was the sanitation of the extra-cantonment zones established by the army for making effective the sanitary work within the camps. In addition it furnished funds and personnel in its cooperation with the United States Public Health Service and the health officials in combating the influenza epidemic. Abroad, the record of the Red Cross is a long one. It operated in twenty-five foreign countries, doing everything from literally "practicing medicine" to sustaining a nation. With material relief and medical aid it served the civilian population as well as the military organization. It fed the malnourished children of France, fought typhus fever in Serbia, and promoted school hygiene in Italy. The whole of Europe and parts of Asia knew the symbol of the American Red Cross. All of these things were possible only because here at home this symbol appealed to the hearts and hands of the people of our country to a degree that made 22,000,000 of them become members of the organization, and 8,000,000 of them actively enlist for personal service.

The unit of Red Cross organization was a little band of people called a chapter. Three thousand of these, with seventeen thousand branches were scattered all over this country. For ease of administration these chapters and branches, were grouped into fourteen larger units called divisions; the divisions in turn were responsible to the Central Committee at National Headquarters in Washington. This was the machinery which was organized to reach millions of our population quickly and effectively in order that they might do their part towards meeting the needs of their government at war. Through this machinery the Red Cross taught its members how to serve freely for the common good.

Through this extension it became the most tremendous organized social force in the history of the world.

With the signing of the armistice a new situation confronted the Red Cross. There had been built up this enormous voluntary organization. By actual demonstration it had proved its ability to carry on an extensive system of relief and

health work. In doing this it had drawn upon hitherto untapped reservoirs of service for the common good in the shape of millions of volunteers. The great force called into play had proven one of the important factors in the successful supplying of the necessities of war.

Might it not also be of great value in meeting the problems of peace? Should the Red Cross junk this great organization and dissipate this spirit of public service drawn out by the emergency? The answer to these questions involved a grave responsibility. After careful study and mature deliberation it was decided that an effort would be made to conserve this great social force and direct it into channels where it promised to be of real service to our country.

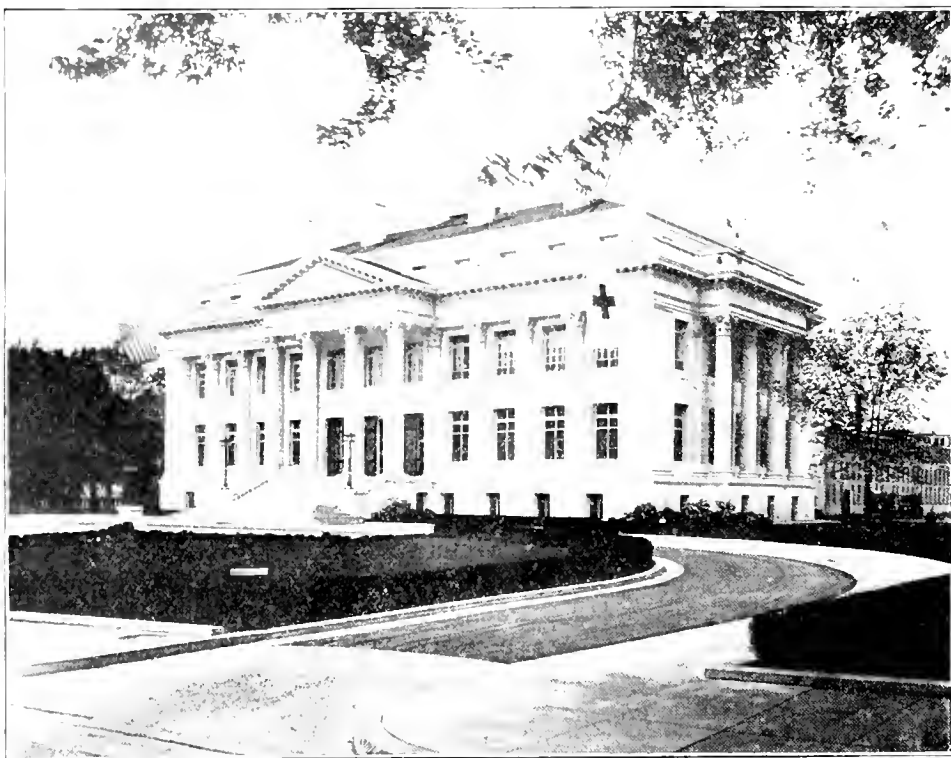
The next problem was to select a field in which this kind of a force would be most useful. By reason of the past history, traditions, and experience of the American Red Cross one of the fields chosen was that of public health. Accordingly, it was planned to study carefully the health problems and health resources of our country in order to determine whether there were any unmet needs in public health which might properly be assumed by the Red Cross. This study was conducted with the full appreciation of the fact that in its last analysis the protection of the public health and prevention of disease is an official responsibility; further, that any activities of the Red Cross must lead toward the time

when the legally constituted health authorities shall be provided with adequate funds and sufficient public support to enable them to handle the whole health job without the assistance of voluntary health organizations.

In reaching a decision as to the direction the Red Cross should take in the field of health it was necessary to review the major public health problems which are occupying the time and attention of health workers of the country. It is neither necessary nor desirable to discuss these problems in detail in this article. For purposes of study

they were considered broadly in order to determine whether there could be found any common factor which might indicate a course of action. This broad classification of public health problems may be of general interest: (1) Control of communicable diseases; (2) detection and correction of physical defects; (3) prevention of disease; and (4) promotion of health and prolongation of life.

The control of communicable diseases continues to be one of the major activities of health workers. One needs to but run over the list of causes of death to bring vividly to mind the work that remains to be done in this field. This is true, notwithstanding the fact that science has accumulated knowledge of the cause, mode of transmis-



American Red Cross National Headquarters, Washington, D. C. It has been conceived as a National Headquarters comparable to Army Headquarters issuing to its division commanders orders which in turn were issued and carried out by the chapters and branches to a force of some twenty million members. Its membership constitutes a tremendous social force.

sion, and cure of many of these diseases. In addition, well trained health workers stand eager and willing to apply this knowledge. When these facts are considered, it seems almost incredible that communicable diseases should continue to account for 21 per cent of all reported deaths. The reason for this state of affairs is not to be found in the unsoundness of our scientific knowledge or the unwillingness of our health organizations, but is to be found in lack of proper education of our people in matters pertaining to health; for the testimony of our best health workers all agrees that it is not by legislation but by educa-

tion that the control of communicable diseases can be attained.

### Health Inventory is Made

The detection and correction of physical defects is one of the newer but none the less important, of our health problems. Originally brought to light by the examination of our school children, we have had striking confirmation of its importance from the compulsory physical inventory of a special group of our population under the Selective Service Act. The figures and percentages of defects revealed by these examinations are only of passing interest, but the medical interpretation of them is of vital significance. Our best medical men have told us that a large percentage of these defects could have been easily corrected in childhood. All health workers are united in the desire to have this corrective work done, but only a small percentage of our school children are securing the proper inspection and instruction. Investigation shows no lack of knowledge of how this problem can be solved, but does show a lack of appreciation of its importance by enough of the citizens of our country to have it translated into the official machinery to accomplish it. This appreciation can be brought about only by education.

The prevention of disease is one of later activities of the health authorities. It has only been possible for us to focus our attention upon this subject since scientific investigation has furnished us with exact knowledge of the cause, mode of transmission, and method of diagnosis of the various types of disease. Upon this knowledge has been built up the administrative machinery for actually preventing disease. Laws have been passed, budgets furnished, and public support accorded that have enabled the official health machinery to function with great efficiency with reference to some diseases. This is strikingly illustrated in many parts of our country in the case of typhoid fever. On the other hand, with all of the essential facts at hand about such diseases as tuberculosis, smallpox, and venereal disease, the health official is not able to function to his highest efficiency because public opinion has not advanced to the point where sufficient powers and funds are provided for the adequate control of these diseases. The health authorities of this country can advance no more rapidly than public opinion will permit them.

The promotion of health and the prolongation of life constitute the latest among our health problems to receive proper recognition. Until very recently our activities in the health field have been largely defensive. Many of our best health departments were organized to meet an emergency, such as an epidemic. As the trained scien-

tific minds of our country studied this problem of disease they discovered that the physical state of the human body was of equal importance with the infecting organisms which were playing upon it. Consequently there has grown up a realization of the need for a positive ideal of health. This newer conception of the problem has already demonstrated its usefulness. It has been very well said that in our battle against disease we have always been on the defensive; it is time for us to take the offensive and hold it. The problem involved in bringing this about, demands a method of reaching our population effectively with scientific knowledge in a usable form and through a channel that can touch every part of our country.

### Health Resources in Two Groups

In a review of the health resources of our country was necessary in order intelligently to judge where the Red Cross could best apply its public health efforts, we found two great groups of health facilities. The one provides service for the individual. It is made up of the practising physicians, trained nurses, and a widespread system of hospitals and clinics; the other provides service for the whole community, including all of the federal, state and local health departments and a group of voluntary health organizations. Our study of these two groups was not made from a critical point of view nor with the idea of assuming any of the functions of any of the individuals or organizations. It was made for the definite purpose of finding the ways in which the energy and resources of the Red Cross could be brought to bear so that it would assist all of these workers to function to their highest efficiency. This involved a knowledge of the extent to which the field of health was being covered by already established agencies.

The consideration of the medical, nursing, and hospital service is not particularly pertinent to this article, though we realize that no public health program is complete which does not provide some way to secure a wider distribution of the benefits of scientific medicine to a larger percentage of our population. The way in which this can be done is not apparent, but it is clear that every effort should be made to conserve the ideals and initiative of the medical profession.

A study of the organizations interested in community health protection was of particular interest. They divided themselves into two groups: the governmental or official agencies, and the non-official or voluntary agencies. The official health agencies have been compelled to limit their development in accordance with the authority and budgets granted to them by our federal, state, and

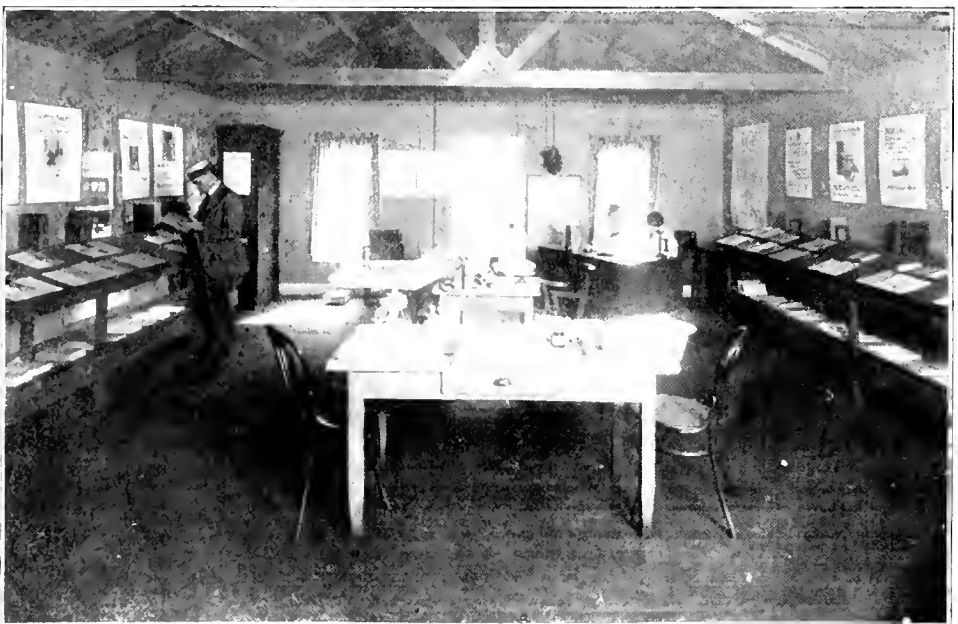
local governments. As a consequence we have the health work of our national government scattered through many departments, whose health functions are only incidental. On the other hand, the states have absolute power in health matters within their borders, a fact which has resulted in a great variety of forms of health administration. The point of peculiar interest in this connection is the limitations it has so frequently placed upon the trained health officials of the country in carrying their health programs in making it necessary for scientific knowledge to be translated into law, through the intelligence of the average voter. This means, for the efficient functioning of our official agencies, raising the health intelligence of a majority of our citizens.

Notwithstanding the limitations placed upon the official agencies there have grown up a considerable group of well organized, excellently conducted federal bureaus, state, and local health departments. These bureaus and departments are headed by the leaders in public health thought. Under them they have gathered together a great corps of technically trained health workers who are capable of giving adequate health protection to the territory under their jurisdiction. The reason that these official health agencies are not meeting all of the needs in the field of health is to be found neither in a lack of scientific knowledge nor in their willingness to serve. It is to be found in the lack of sufficient authority and adequate support from the public. If we want these agencies to function to their capacity, this means universal public information and public education in the fundamental needs for health protection. It is not to be supposed that this group of official workers has not and is not continuing to strive earnestly to accomplish this end; but their progress has been comparatively slow because of the common misjudgment by the public of the motives of a public official who asks for increased powers and budgets. Out of this condition of affairs has developed a group of supplementary health agencies which will be discussed in the following paragraphs.

The organization and development of voluntary

health agencies has been, in part, a consequence of the limitations placed upon the health official. Another equally important factor has been the impatience of the more intelligent members of our communities to await the slow process of translating the benefits of scientific medicine into law through vote of our citizens. Consequently they have formed into groups with the double purpose of helping to educate the public and at the same time demonstrate the need of the particular measure in which they are interested. Further, all of them worthy of the name are temporary organizations; for, if they are based upon sound principles, they will be ready to disappear as soon as proper provision can be made by the health official out of the public funds to furnish the service they have been rendering. On this basis have grown up the National Tuberculosis Association, American Child Hygiene Association, American Social Hygiene Association, National Mental Hygiene Association, American Red Cross, and many other national and local organizations. The work of these great groups of health workers has been an important factor in the progress which this country has made toward furnishing adequate health service to 100 per cent of our population.

It became perfectly evident from our survey of the health problems and resources of our country that there were a great many unmet needs in the field of health. The problem was to study and classify them in a way which would enable us to judge whether any of them were proper fields for Red Cross activity. Briefly stated, some of the unmet needs which are fundamental to the development of the public health movement were



This gives the view of the front of a one-room Red Cross Health Center, showing an information desk near the door, and, at the sides, display tables for public health literature.



found to be some means of: (1) Providing sufficient powers and adequate support for legally constituted health authorities; (2) instituting a broader education of the public to the necessity of a well rounded system of public health service; and (3) bringing about a union of the forces in the field of health.

The first two of these needs are evidently dependent upon the education of individuals in matters pertaining to health. Further, it is undoubtedly true that progress will be conditioned in time upon our ability to reach large numbers of our people readily and effectively. This can only be accomplished by a union of the forces in the field of health. The time has come when, if we are in earnest about our desire to build up adequate health machinery for our country, it is incumbent upon both the official and voluntary health agencies to form a union of such a character as will enable us to secure real concerted action in the solution of our major public health problems. This kind of a union does not involve the sacrifice of the identity, rights, or privileges of its individual members any more than it has involved such sacrifices in the union of our states. An examination of these unmet needs in the field of public health made it certain that any one or all of them were suitable lines of activity for the American Red Cross. It only remained for us to examine the qualifications of the society and try to fit it into the place where it could do the most good.

The American Red Cross seems to be peculiarly well qualified to help the public health movement at this time because: (1) It is a great national organization with traditions, ideals and experience in health service. (2) It has a large membership grouped into thousands of local units. (3) It has a form of organization that will enable it to co-operate freely with every operating agency in the field of public health.

These qualifications indicated that the Red Cross possessed resources for rendering unusual service in the field of public health if a suitable program could be devised and the proper relationships established with the agencies already working in the field. If the ideals and experience in service of the millions of members of this Society could be enlisted and directed into health channels, it would advance the cause of public health in a measure that cannot be estimated. This assumed an unusual significance when it was found that the most pressing needs of the health movement were in the field of health education, a field for which the Red Cross is peculiarly fitted. Here, then, was found a basis for a health program which fitted the experience of great national

organization and at the same time promised to keep alive and active, for the public good, that wonderful spirit of unselfish service drawn out in the Red Cross by the emergency of war.

### Great Responsibility Involved

The building of a Red Cross health program involved great responsibilities. To guard jealously against infringing upon the duties and functions of the constituted health authorities or other voluntary health agencies, at the same time to safeguard and conserve the best of our own organization constituted a difficult task. Mistakes have been made and misunderstandings have arisen, but none of them are insuperable. For the Red Cross reiterates its statement that it does not propose to swerve from its purpose of having all of its activities point toward the day when they shall be assumed entirely by proper authorities.

The Red Cross health program will follow two main lines of activity, health education and demonstration. These activities will be administered through the Department of Nursing and the newly established Department of Health Service.

The Department of Nursing has already made great advances in its health work through its public health nurses and its classes in home hygiene and care of the sick and food selection. This work is well known and well coordinated with the official health agencies. This is shown by the fact that the Red Cross has working agreements with twenty-six states whereby it shares the expenses of the placement and supervision of public health nurses. It is proposed to extend the nursing program and to continue actively to support the efforts to enroll and train sufficient nurses to meet the demands.

The Department of Health Service has been charged with the responsibility of carrying out the general health program. In this department has been grouped some of the older health activities—First Aid and Medical Social Service. It is proposed to continue and extend these activities as the circumstances warrant; but the main responsibility of the Health Service Department was to find a vehicle that would enable the Red Cross to function effectively in the general health field. Evidently this vehicle, if it was to fit the Red Cross, must utilize local organization; provide some means of cooperating with the constituted health authorities and with other voluntary organizations; and, finally, it must look toward the education of the people. The answer to the requirements has been found in the Health Center. It makes possible the local application of local resources; it permits each organization to work with the other without losing its identity;

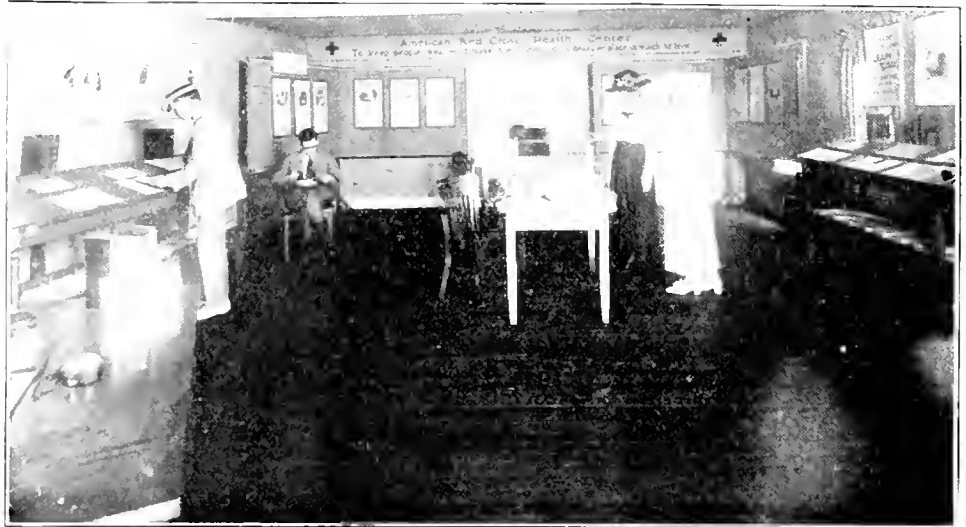
and it provides a channel for the communication of authoritative health information to a large number of people.

The Red Cross does not claim to have invented the Health Center idea. For many years, it has been going through a definite period of evolution. It was originally conceived by public health workers in response to a universal need for some improved method of securing the more general application of the scientific knowledge of disease to individual cases. It is more than a mere coincidence that we find some form of effort developing under the name of Health Center, in England, France, Belgium, Wales, Australia, Canada, and Cuba, as well as in many parts of our own country. This can only mean that we are dealing with an idea of unusual value. It is not surprising, therefore, that a study of history of the health center idea brings out the fact that the term Health Center has come to be applied to many different kinds of efforts. We find it used as a name for child welfare

stations, tuberculosis dispensaries, venereal disease clinics, out-patient departments of hospitals, settlement houses, and substations of local health departments. A careful analysis of the origin and functions of these various activities working under this name yielded some interesting facts. It showed that in most institutions called health centers considerable clinical work is performed; in a comparatively small number, except those for children, little emphasis is placed on prevention; a few have brought together all of the agencies working in a given field; scarcely any of them have used the idea as a means of general health information and education. All of them have fallen short of their greatest usefulness because they lacked the social machinery to reach effectively a large percentage of the population.

As a result of this analysis, the Red Cross realized that by reason of the form and character of its organization, it was peculiarly fitted to supply the social machinery which would make the health center a powerful weapon in the hands of the public health workers. It has found in the health center an institution which can be locally operated with a minimum of outside direction. It

has found in it an activity that would enlist the interest of local Red Cross Chapters and could be carried by them in cooperation with local organizations, including the health department. It has found in the health center a means of personally delivering to people authoritative information regarding hygiene and sanitation. For these reasons the establishment and promotion of health centers has been made the chief project of the Health Service Department. On the basis of the experience and character of the Red Cross organization there has been planned a type of



View of the rear of a one-room Red Cross Health Center, showing a temporary exhibit on Child Welfare.

health center which includes the older conceptions of this idea, but emphasizes the modern idea of health education plus cooperation of all the health agencies working in a given field.

In its most elementary form the American Red Cross Health Center is an educational, informational institution. A carefully worked out illustrated pamphlet has been prepared giving local chapters detailed instructions as to how the Health Center is to be conducted in a way that it will meet local needs. These instructions are supplemented by the supervision of the trained health service directors placed at every Division headquarters. Through this official, proper relationships of this Red Cross activity will be established with the official health organizations. With this machinery the Health Center becomes really a clearing house for health resources. It brings to the community the wisdom and assistance of the great public and private health organizations; on the other hand, it does not fail to make full use of all local health assets.

In the establishment of these health centers the Red Cross invites the participation of every operating health agency in the field. One of the





## MENTALLY DEFECTIVE CHILDREN\*

BY A. LEVINSON, CHICAGO

IT SEEMS that the more civilized the world becomes the more idiotic it becomes. The world can boast now of more mental defectives than it could centuries ago, though it is possible this is because our advanced knowledge of the human mind makes easier the detection of mental deficiency. This, however, does not lessen the gravity of the fact that at the present time a high ratio both of children and adults are mentally below par. The questions that naturally present themselves to anyone who is interested in the subject are, (1) how to detect mental deficiency, and (2) what is the best way to treat mental deficiency in order to do the most good for the person affected and for society at large.

Many articles and books have been written on methods of detecting mental deficiency in adults and in children of school age. Very few authors, however, have laid sufficient stress on the detection of mental deficiency in infancy and pre-school age. Most children have their mentality standardized by the school teacher. Very few children are rated mentally before that period. As a matter of fact, the status of a child's mentality should be recognized much earlier than at the school period. It is unfortunate that to this day no standards of mentality have been worked out for infants; but even the common sense standards, such as the period when a child normally responds to light, begins to crawl, to stand, and to speak, provide adequate data on which a child may be regarded as belonging to one class or another. The human race has learned by experience that at the age of five or six months the child begins to sit up; that at the age of twelve or fourteen months the child begins to walk; that at the age of twelve to fifteen months the child begins to talk. Any child that does not conform to this standard may be considered as not normal.

It is, of course, necessary to make the time limit for mental activity quite flexible. The fact that a child cannot repeat all the words he hears

*Altruistic motives demand for the feeble-minded an education and environment that will lead them into productive and useful lives. Society, however, must be protected against deterioration through them.*

*Improved methods for their detection and care will evolve out of present tendencies to recognize both physiological and psychological factors entering into the causation of mental and nervous disorders.*

*The possibility that even in infancy the signs of inadequacy are patent to trained observers makes feasible the registration of all defectives and a follow-up of those showing asocial tendencies which would afford both prevention and correction.*

at the age of fifteen months does not suffice to put it in a class of mental defectives. It is the general intelligence of a child that counts, and not a single trait.

Parents should be the best judges of the mentality of their children. They are, however, either ignorant of what the child should be able to do or they are swept away by their parental love into hopes of a normal development even though delayed.

The question of mental tests for older children is important. As pointed out in another article of this series, observation over a long period needs to be made before a child is classed as a mental defective. Accepted intelligence tests are inaccurate, for what might be an easy question for a child with mechanical ability may be hard for another child equally intelligent, but not mechanically inclined. The worker should, therefore, realize his or her responsibility in the matter of applying intelligence tests.

The treatment of mental defectives must necessarily vary with the degree of mental deficiency, the etiology of the defect—if causes can be ascertained—and with the economic means of the parents. There are certain principles, however, that apply to all mental defectives, among which the following may be considered most important: (1) Recording of each case; (2) provision of epileptic colonies; (3) the organization of juvenile psychopathic clinics and hospitals; and (4) special schools or at least rooms for mental defectives.

If every mental defective were kept track of by health or police authorities and the behavior of these defectives watched as they grow older, many crimes would be prevented. Furthermore, by this means many crimes could be traced to those who committed them. If during infancy all children were rated as to their mentality, some of them who under present conditions are doomed to a life of idiocy could possibly be saved. I am referring in particular to the mental defective traceable to hereditary lues.

Society is slow to recognize the necessity of

\*The tenth of a series of articles dealing with medicosociologic problems in the field of pediatrics prepared for the pages of MODERN MEDICINE by Dr. Levinson.

epileptic colonies, of juvenile psychopathic clinics, and of juvenile psychopathic hospitals. Had there been more epileptic colonies where life could be made comfortable to these unfortunate creatures, the need would have been much less for the provision of jails.

### Emotionalized Estimates Unsafe

As yet we have no method of treating birth injuries due to cerebral hemorrhage, but in all such cases the earlier the recognition of delayed mental and physical development due to birth injury, the more it is possible to do in a palliative manner for that particular child. Physicians and social workers would do great service to the community if they would follow the newborn baby not only as to the gain or loss in weight and as to the number of stools, but also as to the progressive development of the child.

Whether the belief is accepted or not that most criminals are insane, it must be conceded that many crimes have as their background a history of epilepsy, the incidence of lues, or a preceding disease of the nervous system. Juvenile psychopathic clinics or hospitals where the maladies could be studied in conjunction with the social histories would be of great value.

Children who are very much behind the rest of the pupils in their class should not be kept in the regular class rooms. It disturbs the normal pupils, holds them back in their work, and gives them a chance to amuse themselves at the expense of the mental defectives. Every city and town should have teaching provisions for mentally defective children either in special schools or in special rooms at the regular schools. Those responsible for the care of such children need to be extremely interested in the work, even more so than ordinary teachers; unless the teachers are specially adapted to their extraordinary tasks, the teaching of the mental defective has no value whatever.

### Nervous and Irritable Children

A discussion of mentally abnormal children in their relation to society must include the large class of children who can be classified as mentally defective, but who are nervous and irritable. Many children who seem to be in good physical condition sleep badly, do not eat well, are irritable and nervous. Excluding in these children the organic diseases—such as syphilis, meningitis, brain tumor, or brain abscess—as causes of nervous instability, there remains a large group of irritable and nervous children in whom no organic cause can be found but whose cases cannot remain unstudied. Often the cause can be eradicated and the child returned to normal. At times

the fault can be traced to such conditions as decayed teeth, enlarged tonsils and adenoids obstructing the breathing, or to some other low grade infection. At other times, however, the fault may lie in the mother or the grandmother; in the irregularity of life of the family, or in the over-education of the child. The physician, the nurse, or social worker may often render great service both to the individual and the community at large by the close observation of nervous and irritable children with a view to remedying the trouble.

### RICHARD M. OLIN, M.D.

Under the incumbency of Dr. Richard M. Olin as Commissioner of Health, health work in Michigan has assumed an efficient activity which reaches all parts of the state. Special effort is being made to pass legislation to replace the present sixteen hundred township

health officers by full time health officers in every county of the state. "Give the rural child the same chances as the child of the Ghetto," said Dr. Olin in a recent bulletin.



The increased use of the state laboratories in Michigan serve as a barometer to indicate the people's interest and awakening to public health needs. When the laboratory budget was made out in 1918, about one thousand tests were being run monthly in the

state laboratories. In 1920 more than 120,000 specimens passed through the state laboratory at Lansing. These diagnoses covered everything from anthrax examinations to Widal reactions for typhoid, but the greater amount of work has centered around tests for diphtheria, syphilis, tuberculosis, and water analyses.

### HEALTH PROGRESS IN ONTARIO

Three principal objectives have been before the health workers in Ontario for the past ten years, according to J. W. S. McCullough, in the July issue of the *Public Health Journal*: (1) the consolidation of the public health laws; (2) the lessening of the scourge of tuberculosis; and (3) the improvement of methods of administration. As a direct result of this concentration of efforts, Dr. McCullough reports progress in the past ten years as having curtailed the pernicious practice of changing the health officer every year, of paying more adequate salaries, and of providing a much larger percentage of full time men. Facilities for the intelligent handling of the tuberculosis problem have been greatly improved, laboratory service has been extended, the distribution of biological products promoted, and an active campaign against venereal diseases inaugurated. Notable advances have been made in the field of industrial hygiene. As a final index of awakened interest in health matters, Dr. McCullough mentions that, while health funds available in 1910 amounted to \$50,000, for the present year these appropriations amount to \$530,000.

# THE MONTH IN MEDICINE

## A Survey of Current Medical Literature

SOLOMON S. STROUSE, M.D., *Editor*

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### SOME NOTES ON FOOD THERAPY

NEWBURGH,<sup>1</sup> from the University of Michigan at Ann Arbor, throws a new angle on the much disputed question as to fat and its use in the treatment of diabetes. The time is well remembered when diabetic patients were allowed all the cream, oil, or fresh butter wanted. The importance of restricting fats in the diabetic dietary has been recently emphasized, especially in this country, by Allen and Joslin.

However, it has been fully recognized that the low caloric diet and the under-nutrition that went with the new scheme of things were not completely satisfactory in the long run for many diabetic patients. Newburgh has treated seventy-three patients with a diet consisting of high fat, low protein, and low carbohydrates—a diet that on the face of it would seem to be definitely contraindicated in most cases of diabetes. Certainly the only tests of value in interpreting anything of this sort are the results. The results as given by Newburgh are, to say the least, interesting. We feel that he has opened up for investigation again an old angle, but that it will require much more intensive investigation before a final opinion can be expressed.

Compare with Newburgh's statement a recent article of Joslin's<sup>2</sup> on the prevention of diabetes. In this article the point of view is taken that the most important element in the cause of diabetes is obesity, and consequently the most important factor in the prevention of diabetes is the elimination of obesity. Joslin's statistics of one thousand of his own cases are remarkable. There is, however, no comparison made between the obese diabetic and the thin diabetic in regard to the severity, relative fatality, or

length of life. It is true from Joslin's statistics that obesity and diabetes run hand in hand in a large number of cases but that is as much as Joslin's statistics prove. Perhaps obesity is a defense phenomenon for diabetes.

While on the subject of diet, attention should be called to the contribution of Mosenthal,<sup>3</sup> who studied a series of hypertension cases with the object of showing the effect of protein diet on the blood pressure. We know how frequently we tell our patients with high blood pressure to refrain from eating meats. We are rather glad to see that Mosenthal was unable to prove any definite relationship in his series of cases.

EDITOR.

### THE OCULO-CARDIAC REFLEX

DURING the last few years much attention has been paid to the sympathetic nervous system. The work of Cannon and of Crile in this country and of Head and Brown in England has shown the clinical importance of the sympathetic nervous system. A recent contribution to this subject is concerned with the oculo-cardiac reflex, which consists of a change in heart rate on closure of the eyes. It has been found by a number of investigators<sup>1, 2, 3</sup> that under normal conditions closure of one or both eyes results in a bradycardia, but that in a state of shock this reflex is abolished. This state is termed "atony" of the centers. When the reflex is exaggerated, the condition is spoken of as hypervagotonia.

It is impossible at present to state how great may be

1. Loeper et Mongeot: Le Réflexe Oculo-Cardiaque dans le Diagnostic de la Nature des Bradycardies, *Mem. de la Soc. de Biol.*, January 30, 1914.

2. Petzetakis: Effets Reflexes de la Compression Oculaire a Petat Normal, *J. de Physiol. et de Pathol. Generales*, xx, 1915, vi, p. 1927.

3. Lagrave: Contribution a l'etude du Réflexe oculo-cardiaque comateux. Les modifications pendant la chloroformisation. *These de Bordeaux*, 1918-1919.

4. Guyot, J., and Jeanneney, G.: Le Réflexe Oculo-Cardiaque en Chirurgie, *J. de med. de Bordeaux*, November 25, 1920.

1. Newburgh, L. H.: *Arch. of Int. Med.*, 1920, xxvi, Dec. 15.

2. Joslin, Elliott P.: The Prevention of Diabetes Mellitus, *J. A. M. A.*, 1921, lxxvi, No. 2, 79.

3. Mosenthal, H.: *Am. Jour. Med. Sc.*, 1920, clx, 808.

the importance of this particular reflex in clinical medicine. Results cannot fail to accrue, however, from the impetus given recently to the study of the sympathetic nervous system.

## EXPERIMENTAL CHOLECYSTITIS

**A**N ARTICLE by Mann\* affords an interesting field for speculation and may open the way to much interesting work.

Mann has produced an acute cholecystitis in dogs by the intravenous injection of Dakin's solution. The toxic effect of the solution, due primarily to the chlorin, is practically confined to the gall bladder, in comparison the other organs being but slightly affected. The resultant reaction comes on almost immediately and lasts for many months. The condition is not the result of an intravesicular action of the chemicals because the results are the same if the cystic duct is ligated. The specific reaction seems to be on the blood vessels of the liver and most marked on the surface of the gallbladder on account of its greater vascularity. It may be concluded that a specific chemical cholecystitis is produced.

Although much work has been done on the gallbladder, we are still at a loss to explain the manner in which most of the pathological manifestations occur. It may be that further studies will disclose a method of causing a combined chemical and bacteriological cholecystitis presenting pathological pictures resembling those found in human beings. With available means of producing a specific chemical cholecystitis we may be a step nearer in reaching the solution of cholelithiasis, perhaps renal lithiasis as well. Mann's findings may be a very important clue in the effort to unravel the gallbladder mystery.

R. B. B.

## PROTECTIVE VALUE OF PNEUMOCOCCUS VACCINE

**W**ADSWORTH<sup>1</sup> has demonstrated that protection against *Pneumococcus* infection was obtained in mice and rabbits when large doses of *Pneumococcus* vaccine were used. The degree of protection obtained, however, was not great, considering the quantities of vaccine used to vaccinate the animals. The protection was restricted quite closely to the same type of *Pneumococcus* as that to which the vaccine belonged. The dose of vaccine used averaged about six billion organisms. In some animals only one injection was given; in some six, weekly doses, were given.

The important point to be emphasized, it seems to us, is the fact that even these huge doses of vaccine are but slight protection to these small animals. The size of the dose used is about the same as the doses of *Pneumococcus* and mixed vaccines which are on the market and are recommended as protective doses to human beings. If a dose comparable to those given to these small animals were given to human beings, it would be of a size out of all proportion to doses of vaccine which we are accustomed to use in other instances. The reaction in humans given a six billion dose of *Pneumococcus* is at times found quite severe. If this amount were multiplied by fifty or one hundred, to make it comparable to the amounts used experimentally by Wadsworth, it would be an overwhelming dose.

\*Mann, F. C.: The Production by Chemical Means of a Specific Cholecystitis, *Ann. Surg.*, 1921, lxxiii, No. 1, p. 54.

1. Wadsworth, Augustus B.: The Protective Value of *Pneumococcus* Vaccination in Mice and Rabbits, *J. Immunol.*, 1920, v, p. 429.

The investigation of Wadsworth, therefore, bears out what seems to be the present clinical opinion, that the *Pneumococcus* vaccines which are available at present are worthless as prophylactics against pneumonia in human beings.

W. T.

## SALVARSAN AND WASSERMANN-FAST SYPHILIS

**T**HERE are two recent articles in literature which are specially important. One deals with cases of syphilis in which, despite very active treatment, the blood Wassermann test remains positive (Wassermann-fast syphilis). The other deals with the appearance of 1, 2, and even 3 plus blood Wassermann reactions in a series of non-syphilitic dermatological cases with negative Wassermann tests when repeated intravenous injections of salvarsan were given.

It is well known that a considerable percentage of syphilitic infections, especially old or latent cases, continue to show a strongly positive Wassermann reaction even after years of treatment with salvarsan and deep injections of mercury. Wile,<sup>1</sup> using a cholesterolized antigen in the Wassermann reaction, has reported that practically no cases of tabes or long standing, latent syphilis, become Wassermann negative with treatment. These extreme results are open to the criticism that cholesterolized antigen was used. The work reported by Busman and Stokes<sup>2</sup> is not open to this criticism, as in their tests a Noguchi antigen was used. Universal experience has also shown the correctness of the findings that Wassermann-fast cases of syphilis are not uncommon.

The question which naturally presents itself is: To what extent is the degree of control of a syphilitic infection indicated by the Wassermann reaction, and to what extent is salvarsan therapy indicated by this test?

This problem is being weighed in the balance at present and will only be answered after much painstaking work has been done.

It has occurred to Strickler<sup>3</sup> that possibly the intravenous injections of salvarsan may itself produce some effect on the Wassermann reaction. He has put this idea to the experimental test and has found in a series of non-syphilitic dermatological cases, with negative Wassermann tests, that after repeated injections of salvarsan, the Wassermann reaction changes from negative to 1, 2, or 3 plus, in most of the cases. The number of salvarsan treatments varied from four to thirteen; 66 per cent gave two plus, or more, positive reactions. The number of injections of salvarsan necessary to produce a positive reaction varied from one to seven.

At least one important subject has had light thrown upon it by this investigation, and that is the question of the provocative salvarsan injections. Less and less confidence is being placed by all workers in the importance of a provocative salvarsan injection. The results of Strickler have shown the reasons why this empirical lack of confidence in the salvarsan test has developed.

The important phases of the subject to which we wish to call attention in reviewing these investigations are the relationship of the Wassermann test to Wassermann-fast syphilis; the value of the Wassermann test in following a

1. Wile, U. J., and Hasley, C. K.: Serologic Cure (?) in the Light of Increasingly Sensitive Wassermann Tests, *J. A. M. A.*, 1919, lxxii, 1526.

2. Busman, George J., and Stokes, John H.: A Clinical Study of Wassermann-Fast Syphilis, with Special Reference to Prognosis and Treatment, *Am. J. M. Sc.*, 1920, clx, No. 5, p. 658.

3. Strickler, Albert: A Positive Wassermann Test in Nonsyphilitic Patients After Intravenous Therapy, *J. A. M. A.*, 1920, lxxv, 1489.

case of syphilis so far as indications for further treatment are concerned; and the doubt which is cast upon the value of a provocative salvarsan injection in cases of suspected syphilis.

W. T.

## FILTRABLE VIRUS AND INFLUENZA

HALL<sup>1</sup> has injected intravenously and subcutaneously into animals filtrates from sputum of influenza cases, that have passed through Berkefeld or Mandler filters. In these animals there developed pulmonary lesions which were considered characteristic of those found in human cases of influenza. The filtrates injected were bacteriologically sterile, in the usual sense of the word.

This investigation is confirmatory of the results previously published by Olitsky and Gates.<sup>2</sup> These investigators injected the same type of material into rabbits by means of the bronchial route with the same results.

These two investigations, taken together, add considerable experimental evidence to the opinion which has been developing among clinicians, that epidemic influenza, or "flu," is not due to *Bacillus influenzae*, *Pneumococcus*, or *Streptococcus*, but is due to filtrable virus. Further investigations in this field are of extreme importance.

W. T.

## SURGICAL COLLAPSE OF THE APEX IN PULMONARY TUBERCULOSIS

SURGICAL collapse of the apex as a cure for advanced pulmonary tuberculosis has interested foreign surgeons, chiefly German,<sup>3,4</sup> for a number of years. It has also recently been tried in this country, and by comparatively few men.<sup>5,6</sup> The principle is the old one of organ rest, first conceived by Carson. When there are no adhesions between the lung and the pleura, artificial pneumothorax produces complete organ rest, and this procedure has come into a very definite field of usefulness for a particular group of pulmonary cases. If, however, in cases of this group, the lung cannot be collapsed by the introduction of air, the case goes on to the hopelessly tuberculous, with, of course, the hopeless prognosis. It is these cases, otherwise incurable, in which extra pleural collapse of the chest wall has been tried.

Sauerbruch<sup>7</sup> reported the following results from extra pleural collapse: Of 41 patients, 8 were cured, 7 much improved, 13 improved, 3 remained unchanged, 4 became worse, and 6 died. A later tabulation of 122 cases showed 24 cured, 30 considerably improved, 32 improved, 4 unchanged or worse. Friedrich<sup>8</sup> reported 28 cases with 19 recoveries.

All of these cases, it is to be remembered, were otherwise of hopeless prognosis.

Indications for the operation have been given as follows: (1) When the patient would die without surgical interference; (2) when the lesion is one sided and extensive, slight infection of the opposite lung and early tuberculosis involvement of the larynx not excluding the patient from operation; and (3) when, because of extensive pleural adhesions, artificial pneumothorax is impos-

sible. Most of the cases have had unsuccessful pneumothorax therapy for varying lengths of time.

Contra-indications are: (1) When considerable portions of the lung show caseous pneumonic infiltration; (2) the presence of ulcerous intestinal tuberculosis; (3) the presence of recent foci in the lower lobe of the other lung, or of old foci in the region of the hilum of the other lung; or (4) advanced debility.

The surgical procedures have been as follows:

(1) Resection of the first rib in front; also resection of a portion of the clavicle. This has been rather difficult and has been given up.

(2) Resection of the phrenic nerve at the neck to induce permanent paralysis of the diaphragm on the diseased side.

(3) Tuffier's operation "Apicectomy," with insertion of a plomb. This consists in resection of a short piece of the second and third ribs in the pre-axillary line, division of the posterior periosteal envelope of the rib, and collapsing the apex of the lung by separating the parietal plus adherent visceral pleura from the intra-thoracic fescia. The resulting free space is then filled up with fat or paraffin.

(4) The method of Sauerbruch is most widely used. It consists in resecting from the back portions of the first to the eleventh ribs, under local anesthesia. An incision is made about two inches from the spines of the vertebrae, extending from the first to the eleventh ribs. This is carried through the muscles and about two inches of each rib exposed, the field being well infiltrated and the intercostal nerves well blocked. Portions of each rib are then denuded of periosteum and resected. Great care is used not to puncture the pleura. About two inches of the first rib are resected, and the amount of rib resected increases from above downward, so that probably four inches of the last rib are taken away. This generally is sufficient to produce complete collapse.

(5) Wilms has modified the above procedure with the additional resection from the front of the first, second, third, and sometimes fourth ribs at the costochondral junction.

(6) Shivers<sup>6</sup> advocates cutting the tendons of the pectoralis major and minor. After finishing the posterior resection the severed tendons are grasped from behind, pulled under the scapula, and attached to the cut muscles on the vertebral side of the wound. This, he thinks, will produce such complete collapse that anterior resection will seldom, if ever, be needed.

The chest wall must be retained in collapse by a snugly fitting bandage plus adhesive fixed to the sternum and vertebrae.

Shivers states that his primary mortality is 25 per cent, but all patients who live to get out of the hospital do remarkably well. Of twenty operations, only one patient succumbed to tuberculosis after recovering from operation.

HARRY C. SALTZSTEIN.

Many authorities have emphasized on various grounds the importance of play, but discussion passed to a firmer basis after the important work of Groos on the play of animals, for he shows that play was no mere safety valve for superabundant energy and spirits, no mere relaxation, no mere recapitulation, but that it was a joyous apprenticeship to the business of life, a time for replacing instinctive predispositions by learning from experience, a time of elbow room for variations, a time for experimenting before criticisms prune, before casualties induce caution, and before hard work brings on "life-harming heaviness."—Thomson.

1. Hall, Milton W.: A Study of the Lesions Produced by Filtrates of Influenza Sputum, *Arch. Int. Med.*, 1920, xxvi.

2. Olitsky, P. K., and Gates, F. L.: *J. A. M. A.*, 1920, xxiv, 1497.

3. Kronberger, Hans: *Zur Theorie v. Technik der extrapleural Thorakoplastik*, *Deutsch. med. Wchnschr.*, 1917, xliii, 299.

4. Schötmüller: *Ueber Operative Therapie der Langentuberculose*, *Deutsch. med. Wchnschr.*, 1918, xlv, 619.

5. Meyer, Willy: *The Operative Treatment of Advanced Pulmonary Tuberculosis*, *Surg., Gynec. & Obst.*, 1920, xxx.

6. Shivers, M. O.: *Surgical Treatment of Pulmonary Tuberculosis*, *Colorado Med.*, 1919, xvi, 27.

7. Sauerbruch: *Eregeb. d. Inn. Med.*, 1913, x.

8. Friedrich: *Internat. Surg. Congr.*, Brussels, 1911.



## PROGRESS IN PEDIATRICS—COLLECTIVE ABSTRACT\*

SOME interesting contributions have been made during the year to the study of infectious diseases. McCulloch<sup>1</sup> studied the heart in diphtheria by means of the electrocardiograph. He found that in cases in which the effect on the heart is so profound as to interfere with the cardiac mechanism, the outcome is fatal. He believes that patients whose heart muscles alone are involved depend for their recovery largely on the ability to preserve a cardiac reserve sufficient for their needs. The moment this reserve is used up cardiac failure results. The author believes also that the occurrence of myocarditis following diphtheria is largely beyond our control, although the outcome is determined at least in some cases by the protection the heart receives during the course of the disease and during convalescence. The conclusions of this author are interesting because of the practice of many physicians in giving digitalis in cases of myocarditis following diphtheria. The work reported shows conclusively that there is no place for digitalis in that class of cases.

### Immunity in Diphtheria

The Shick test and toxin antitoxin immunization is still a fruitful topic. Blum<sup>2</sup> tested 1,076 children for a period of five years. He found that the younger members of a family gave the same reaction as the older members. Where variations did occur, the younger members gave a positive and the older a negative reaction. In a series of cases in which he gave toxin antitoxin the immunity persisted for at least one or two months. Blum, therefore, believes that it is possible to render an institution free from diphtheria by toxin antitoxin.

Gorter, Bokkel, and Huinink<sup>3</sup> found that the Shick test became negative in more than 50 per cent of cases in which it was positive at the outset. They, therefore, believe that toxin antitoxin is a useful method in child caring institutions.

The question of diphtheria carriers has not been settled as yet. No matter what is being done for these children, they harbor the diphtheria bacilli in their throats. Of late tonsillectomy has been advised by a number of authors. Detling<sup>4</sup> reports nine cases of diphtheria carriers in which he performed a tonsillectomy or adenoidectomy and was successful in clearing the throat of diphtheria bacilli. While he admits that no treatment has as yet proved successful in all cases, he believes that the removal of tonsils and adenoids gives the best results.

### No Specific for Scarlet Fever

No startling work has been done this year on scarlet fever. A number of cases have been reported, but nothing unusual has been accomplished. It is interesting to note how every once in a while somebody discovers a new treatment for scarlet fever. This time it is salicylate of soda that is specific. Ramond<sup>5</sup> claims that scarlet fever is amenable to salicylate treatment and it should be tried in all cases unless the patient has an idiosyncrasy against it. He believes that results are almost immediate; the

temperature falls, the pulse becomes slower, and diuresis follows. It is unfortunate that the author does not seem to know that salicylate of soda has been used in scarlet fever long before he discovered it. One who is familiar with the history of scarlet well knows that there is hardly a drug in the pharmacopeia that has not been tried for the treatment of this disease. There is very little hope, however, of finding any specific cure for the disease until the causative factor is determined.

### Results in Pertussis

The work done this year on whooping cough is quite interesting. No less a pharmacologist than David Macht claims that benzyl benzoate not only relieves the whoop considerably but shortens the disease. So far, the only corroborative evidence outside of the author's own work was brought forth by McMurray,<sup>6</sup> who claims that he obtained satisfactory and immediate results. In his cases the drug was given in doses varying from five to thirty drops and he claims to have seen a favorable effect within forty-eight hours, having observed no unsatisfactory results from it. It will be interesting to hear from other physicians how this remedy worked out in other hands. The reviewer has not seen any exceptional results from benzyl benzoate and was annoyed by the complicating nausea and vomiting that resulted from it. The discoverer of benzyl benzoate, however, is a man of exceptional ability, and judgment must, therefore, be withheld.

A new sign has been described for mumps. Cowie<sup>7</sup> has found that the orifice of Steno's duct on the affected side presents a reddened spot measuring from 1 to 2 mm. in diameter. The duct is edematous and, as a whole, is pale, thus accentuating the central red spot. The duct sign was present in 96 per cent of the cases reported. This sign is interesting and awaits the corroboration of other authors.

The question of recurrent measles has been taken up by Salzmann,<sup>8</sup> who believes that a second attack is possible, an interesting idea because of the difficulty it presents in the diagnosis of rashes.

Every once in a while some author discovers that the Wassermann reaction is positive in a certain disease, overlooking the possibility that the reaction may be a mere coincidence in that particular case. Practically every disease has been ascribed to syphilis because the Wassermann was found positive in a few cases. This time it is reported that scarlet fever and measles were found to give a positive Wassermann in a few cases. Laederich and Bory<sup>9</sup> found a positive Wassermann in sixteen cases of scarlet out of a total of twenty and a positive Wassermann in ten cases of measles out of a total of thirteen. They, therefore, conclude that with a sensitive antigen the Wassermann test is always positive in the first few of scarlet, and then tends to become negative, a finding that is true to a lesser degree in measles.

### The Virus of Encephalitis

Interesting work has been done on encephalitis. Loewe, Hirshfield and Strauss<sup>10</sup> obtained filtrable virus from the

\*The first section of this abstract, published in the December issue of MODERN MEDICINE, referred especially to the nutrition of children.

1. McCulloch, H.: Studies in the Effect of Diphtheria on the Heart, *Am. J. Dis. Child.* 1920, xx.

2. Blum, J.: Active Immunization Against Diphtheria in a Large Child-Caring Institution, *Am. J. Dis. Child.* 1920, xx, 22.

3. Gorter, E., Bokkel, Ten, and Huinink, A.: Active Immunization Against Diphtheria, *Arch. de méd. des enfants*, 1920, xxiii, 338.

4. Detling, F. E.: Treatment of the Diphtheria Carrier with Special Reference to Tonsillectomy and Adenoidectomy, *California State J. M.*, 1919, xvii, 295.

5. Ramond, F.: Treatment of Scarlet by Salicylate of Soda, *J. de méd. de Par.*, 1919, xxxviii, 117.

6. McMurray, T. E.: The Benzyl Benzoate Treatment of Whooping Cough, *New York M. J.*, 1920, cxii, 122.

7. Cowie, D. M.: The Duct Sign in Mumps, *Am. J. Dis. Child.* 1920, xx, 75.

8. Salzmann, N. M.: Recurrent Measles, *Ztschr. f. Kinderh.*, 1920, xxiv, 205.

9. Laederich, L., and Bory, L.: The Bordet-Wassermann Reaction in Scarletina and Measles, *Bull. et mém. Soc. méd. de hôp. de Par.*, 1919, May 23.



nasopharyngeal mucous membrane of fatal cases of epidemic encephalitis. Later, they<sup>11</sup> found that filtrates of nasopharyngeal mucous membranes from epidemics of encephalitis produced corresponding lesions when injected intracranially into rabbits. It is to be hoped that the virus of encephalitis will meet a better fate than the virus isolated by a number of authors from poliomyelitis. The fact that other workers in the field cannot duplicate the results of the discoverers does not necessarily speak against the reliability of the discovery; still, if a test is to be useful, other workers than the discoverer have to be able to find the organism or perform the test. So far this has not been the case neither with poliomyelitis nor with lethargic encephalitis. If the discovery of Loewe and his associates proves to be true, it will facilitate the diagnosis of encephalitis, which at present is a very difficult task.

Emphasis is laid by Levinson<sup>12</sup> on the quality of changes of the cerebrospinal fluid in various diseases. The author believes that cerebrospinal fluid of various affections of the nervous system differ not only quantitatively but also qualitatively. He also believes that the presence of a sediment or pellicle in cerebrospinal fluid is an indication of a meningitis. This view is rather radical, but is claimed by the author to be based on experience. Levinson also is of the opinion that meningism produces only physical changes in the fluid, such as increased amount and increased pressure, but no chemical or physicochemical changes.

Gingold<sup>13</sup> describes the following new sign for tuberculous meningitis: by flexing the head on the chest either bilateral or unilateral internal strabismus develops. If this sign proves to be present in all or the majority of cases, the diagnosis of tuberculous meningitis will be made much easier than it is at present. Everyone who works with children knows how difficult it is to make an early diagnosis of this condition; in fact, at times it is almost impossible to make a diagnosis ante-mortem. The reviewer, however, is rather skeptical as to the reliability of this sign. It seems to him that many conditions may produce the reaction described by the author and that it can in no way be taken as specific for tuberculous meningitis.

### Traumata of the Newborn

Some interesting research has been done recently on hemorrhage of the newborn. Warwick<sup>14</sup> found that in a series of thirty-six autopsies on stillborn babies, eighteen, or 50 per cent, showed definite hemorrhage in the dura over the brain or in the ventricles and that in eight of these thirty-six infants gross hemorrhages were found in other organs beside the brain. The author comes to the conclusion that hemorrhage of the brain is brought about by trauma in normal rapid deliveries, by congestion or asphyxiation in slow deliveries, or by disease of the child itself. Forceps delivery and advanced age of primipara mother, on the other hand, do not play as important a rôle as formerly taught.

This conclusion is interesting because until very recently we have been accustomed to attribute hemorrhage of the brain in the newborn and its resulting cerebral palsies to forceps delivery.

Foote<sup>15</sup> strikes a new cord by suggesting that hemorrhage of the brain in the newborn is simply a manifestation of a hemorrhagic tendency in the patient. He, therefore, suggests that a coagulation test be done on the blood of all newborn infants. It is interesting to note that, simultaneously with the suggestion of Foote, another worker, Rodda,<sup>16</sup> of Minnesota, has performed coagulation tests on the blood of newborn infants and found coagulation to be an important factor in hemorrhage of the brain.

A good deal of work has been done recently on the blood of infants. Happ<sup>17</sup> tested the blood for iso-agglutinins and found that the grouping as present in adults is rarely present in blood from the umbilical cord. He also found that at birth and during the first month of life, iso-agglutination is rarely present, but that the percentage of infants in whom the iso-agglutinin group is established, increases with age, so that after one year the group is usually established, and after two years it is always present as in adults. The author believes that on account of the differences between the agglutination reactions in the blood of mother and child it is not safe to transfuse an infant from its mother without making the preliminary tests.

In spite of the increased figures on the chemical composition of the blood in adults and its change during disease, there are as yet no standard figures on the chemistry of the blood in infants and children. It is therefore interesting to know the observation of Chapin and Myers,<sup>18</sup> who examined the blood in a series of 149 children, 38 of whom were nephritic, and 6 of whom were diabetic. The authors found that nephritis in children does not result in urea retention as quickly as in the adult. This makes the prognosis of nephritis more favorable in early life. Creatinin retention rarely occurs in children.

A new clinical picture has been described by Hess and Myers<sup>19</sup> under the name carotinemia. This sign consists of a yellow discoloration of the skin on a diet rich in carotin, such as carrots, spinach, egg yolk and orange. The condition resembles mild jaundice, except that the sclera is not involved in carotinemia.

This clinical observation is interesting as it puts one on guard in making a diagnosis of icterus.

### ILLINOIS CARE OF CRIPPLED CHILDREN

The number of permanent clinics for crippled children throughout the state of Illinois has increased to twenty-seven, and the need is such that a definite demand has been made upon these clinics for full instead of half-day service, and the clinics are to be held with greater frequency.

Hospitalization of these crippled children is not called for. For the most part they are not sick, and the environment of general hospitals is unsatisfactory. The provision for a hospital for crippled children for which appropriation was made by the last General Assembly will not be available for some time, during which interval the enterprise must be carried on by means of private subscription and individual initiative.

10. Loewe, L., Hirshfeld, S., and Strauss, I. Studies in Epidemic Encephalitis, *J. Infect. Dis.*, 1919, xxv, 378.

11. Loewe, L., and Strauss, I.: Diagnosis of Epidemic Encephalitis, *J. A. M. A.*, 1920, lxxiv, 1373.

12. Levinson, A.: Qualitative and Quantitative Changes in the Cerebrospinal Fluid of Various Diseases and Their Significance, *Am. J. Dis. Child.*, 1919, xviii, 568.

13. Gingold, G.: An Early Diagnostic Sign in Basilar Meningitis, *Arch. Pediat.*, 1920, xxxvii, 9.

14. Warwick, M.: Cerebral Hemorrhage of Newborn, *Am. J. M. Sc.*, 1919, July.

15. Foote, J. A.: Hemorrhagic Tendency as a Frequent Cause of Cranial Hemorrhage of the Newborn, *Am. J. Dis. Child.*, xx, 18.

16. Rodda, F. C.: Coagulation Time of Blood in Newborn, With Especial Reference to Cerebral Hemorrhage, *J. A. M. A.*, 1920, lxxv, 452.

17. Happ, W. M.: Appearance of Isoagglutinins in Infants and Children, *J. Exper. Med.*, xxxi, 313.

18. Chapin, H. D., and Myers, V. C.: Chemical Examination of Blood in Children, *Am. J. Dis. Child.*, 1919, xviii, 555.

19. Hess, A. F., and Myers, V. G.: A New Clinical Picture, *J. A. M. A.*, 1919, lxxiii, 1743.

## MEDICAL WORK IN PALESTINE

Palestine's first medical journal, "*Harefooh*" (Medicine) has recently made its appearance, published by the Jewish Medical Association of Palestine. The journal is quarterly and its first issue is dedicated to the memory of the Jewish physicians and nurses who "lay down their lives in the years of upheaval in the Holy Land."

The objects of the medical association, as outlined in the quarterly, are to strengthen and coordinate the medical forces of the country and to collaborate with doctors outside Palestine; to give the medical work a national as well as a human value; to prepare a native soil for Jewish scientists; and to help in the creation of the Hebrew University.

Medical work in Palestine has advanced rapidly during the past two years, stimulated by the American physicians and nurses with the American Zionist Medical Unit, who have taught the native members of the profession all the latest ideas in medical work and sanitation. Clinics are held by the American doctors, to demonstrate to the Palestinian doctors the most modern methods, and lectures are given at regular intervals.

The hospitals and clinics established by the American Zionist Medical Unit in Palestine are planned as the beginnings of the Medical College of the Hebrew University at Jerusalem, which Prof. Patrick Geddes, noted town planner of the University of Edinburgh, is designing.

## OCCUPATIONAL DISEASES IN NEW YORK

The growing complexity of the problem of occupational diseases before the Compensation Boards is illustrated by a recent case decided in New York, in which an employee died from an occupational disease contracted in the industry but was denied compensation because the Act compensates only industrial accidents. The report of this case, appearing in the *Bulletin* of the New York State Industrial Commission, is of special medical interest.

Claim for compensation is made by the widow of Joseph A. Foster growing out of his death on March 6, 1919, as the result, as it is claimed, of an industrial accident. The certificate of death filed with the Bureau of Vital Statistics gives the cause of death as "arterio-sclerosis," contributory, "cerebral hemorrhage." The employer's proof of death gives the cause of the death as follows: "His constant handling of lead plates with frequent scratches on hands and working over metal pot inhaling fumes of molten metal caused lead poisoning."

There seems on all the evidence to be no doubt but that the deceased did die as the result of lead poisoning, and the only question to be determined is whether the poisoning was the result of the accident within the meaning of the Compensation Law or must be classed as an occupational disease.

In his opinion, Commissioner Lyon reviewed the evidence taken before the deputy commissioner showing that the deceased had worked in the electrotype part of the Star plant or in similar establishments for years; that in so doing he clipped the lead off the edges of the plates with a long pair of shears, and that he and other men engaged on like work were continuously cutting and scratching their hands from the lead. Several years before his death Foster suffered from carbuncles, which appeared on his hands one after the other. Witnesses gave their opinion that this infection was due to his occupation. Commissioner Lyon's conclusion follows:

The testimony also shows that the men who work in electrotyping, as the deceased did, are continuously cutting their hands and treating themselves with iodine and other washes, and the deceased's daughter testified that at the time of his last sickness he had cuts on his hands, and she also testified that he previously had cuts of this particular character.

The full picture presented by this testimony is that of a man who is thoroughly saturated with lead poisoning,

which is the accumulation of years of work in and about lead. No one was found who could testify to any particular accident which the deceased had. If he cut his hands at or about the time when he was last taken sick, the cut was so slight and so exactly in accordance with what was happening to him day after day, that it caused no attention either from himself or from anyone else. The deceased not only had the duty of working around the electrotyping plates, but he had worked for long periods of time over pots containing muriatic acid, which gave off very offensive and apparently very unhealthy fumes.

I am clearly of the opinion on the whole record that the death of Mr. Foster was the result of an occupational disease and not of an industrial accident, and I advise that an award be denied.

The Commission affirmed the opinion of Commissioner Lyon.

## CONQUERING PLAGUE IN THE PHILIPPINES

Recent discovery of a number of isolated cases of the bubonic plague in the United States has quickened the public concern in fighting the plague in its primary focus and lends interest to a *Bulletin* of the National Geographic Society describing how the disease was conquered by American medical authorities in the Philippines.

"The United States drove the bubonic plague out of the Philippines as completely as it swept the yellow fever out of Cuba," says a communication to the Society.

"Bubonic plague was discovered at Manila December 26, 1899, and slowly but steadily increased up to December, 1901.

"The deaths in 1900 numbered 199, and in 1901 reached a total of 432. The disease was at its worst each year during the hot, dry months of March, April, and May, nearly or quite disappearing during September, October, November, and December. It will be noted that the number of cases in 1901 exceeded that in 1900 by 200, while the number of deaths was about two and a half times as great, and the percentage of mortality among persons attacked increased from 73.4 in 1900 to 91.7 in 1901.

"On account of the important part which house rats are known to play in the distribution of bubonic plague, a systematic campaign was inaugurated against these rodents in Manila. Policemen, sanitary inspectors, and specially appointed rat catchers were furnished with traps and poison, and both traps and poison were distributed to private individuals under proper restrictions. A bounty was paid for all rats turned over to the health authorities, and stations were established at convenient points throughout the city where they could be received. Each rat was tagged with the street and number of the building or lot from which it came, was dropped into a strong antiseptic solution, and eventually sent to the biological laboratory, where it was subjected to a bacteriological examination for plague.

"Buildings in which plague rats were taken were treated exactly as were those where the disease attacked the human occupants. The bacteriological examination of rats enabled the board of health to follow the pest into its most secret haunts and fight it there.

"With very few exceptions, there was no recurrence of plague in buildings which had been disinfected and renovated. As center after center of infection was found and destroyed the percentage of diseased rats began to decrease, and in January, 1902, when, judging from the history of previous years, plague should have again begun to spread among human beings, there was not a single case. In February one case occurred. In March there were two cases, as against sixty-three in March of the preceding year, and before April the disease had completely disappeared."

# HEALTH IN INDUSTRY

## Hygiene, Sanitation, Medical and Hospital Service in Relation to Industry

Official Organ of the American Association of Industrial  
Physicians and Surgeons

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### DISEASE PREVALENCE AMONG WAGE EARNERS

FROM figures supplied by sick benefit organizations of certain plants which are cooperating with the United States public Health Service there are presented in *Public Health Reports* of December 3, covering the first six months of 1920, tabulations of sickness frequency among industrial employees. Only those cases are included which caused disability of one week or longer. As the reports from these organizations were more or less discontinuous, the rates are computed for each month separately, and not for the full six months period. The percentages are based on the number of employees reported as holding membership in the various organizations during each month. While practically all of the reporting organizations require a physician's certificate naming the ailment causing disability, the correct diagnosis is probably not always reported; the figures, however, afford a fairly accurate idea of the more serious affections occurring among the working people.

If the cases of sickness which disable for at least a week should occur as often during a whole year as they did in each of the several months, the number of such cases by the end of the year for every one thousand persons would be as follows: January, 267 per thousand persons; February, 324; March, 133; April, 133; May, 94; June, 82.

Extraordinarily high incidence occurs in January, which is the more significant when it is considered that thirteen of the twenty-nine reporting associations represent men in the most vigorous period of life. These workers constitute definitely a selected group also, in that female membership is relatively small, venereal diseases are not included, and chronic diseases contracted prior to membership are eliminated. The figures, therefore, may be regarded as a *minimum* statement of the disabilities occurring lasting ten days or longer. The high incidence in February is attributed to a recrudescence of epidemic influenza. A marked seasonal variation is a conspicuous feature of the report.

The reports were again studied from the viewpoint of the frequency of specific diseases and groups of diseases. The outstanding causes of disability are found in the general, the respiratory, and the digestive groups,

these three groups comprising 86 per cent of the total sickness in February, fluctuating according to the seasonal variation to 60 per cent of the rate for all diseases in June. The monthly fluctuations in the incidence of all diseases, of the more important specific diseases, and of groups of diseases are indicated in a general way for each association. The respiratory diseases were greater than the rates for any other group, not only in January and February, but in June as well. The general diseases in every month except April were slightly less frequent than the digestive disturbances.

The most outstanding feature is, of course, the incidence of epidemic influenza. Next in importance were bronchitis, pneumonia, and diseases of the pharynx, principally tonsillitis. Rheumatism was most prevalent in April and May. For new cases of tuberculosis the rate varied between one and three per one thousand persons a year.

The reporting associations were classified according to size. While all showed the expected seasonal variation, the wide differences shown in the frequency rates for the various associations would seem to indicate strong reasons for a careful study of the causes of illness in the different plants, and of the conditions which gave rise to them. While the records of the several establishments are not sufficiently comparable to make specific deductions, the value of such statistics becomes plainly manifest in the problems they indicate. As such records accumulate, and as the sources of such definite and reliable data are extended, they should afford prompt and satisfactory means of obtaining current information of the incidence of disease among the wage earning population.

The tabulations presented represent merely a beginning in the publication of industrial morbidity statistics, and industrial plants everywhere are urged by the United States Public Health Service to cooperate in the collection of sickness statistics by furnishing reports periodically. No better means of really conserving health can be found than the systematic observation and analytical study of health conditions as they obtain in the environment of the wage earner, the mass of which data needs to be secured from industry direct. More detailed analyses will not only point out the health hazards that beset the wage-earner, but should indicate the point of attack and suggest measures of prevention.

S. P. M.

# MEDICAL WELFARE WORK IN SMALL FACTORIES\*

BY A. C. BURNHAM, M.D., NEW YORK CITY.

THE author has previously called attention to the neglect of first aid in small industrial establishments.<sup>1</sup> In the same issue of the periodical in which this article appeared there was published a report prepared by Dr. James E. M. Thomson upon industrial health service in a group of comparatively small industries located in a mid-western city of approximately seventy thousand inhabitants. The report covered 4,291 employees in thirty-four establishments, ten of which employed between 200 and 550 workers, the remaining twenty-four all employing less than 200. He found that not a single firm had an organized medical department and that only seven had first aid stations. That this condition is not limited to certain sectional areas is indicated by the results of a health study by the American Red Cross in a number of small cities located in central New York.<sup>2</sup>

In the New York survey there were a total of 2,291 employees in twenty-five factories located in small cities in the central part of the state, cities of approximately ten thousand inhabitants. The largest number of employees in one factory was 400 and the average number of employees was 92. Four of the factories had no first aid equipment, none of them had a trained nurse in attendance, and only two had any sort of trained attendants. Most of the employers reported that there was a physician "on call," but in many cases inquiry developed the fact that the physician's care was limited entirely to the treatment of emergencies. In answer to a question as to the character of medical and surgical care of employees the answer was almost invariably: "None beyond the requirements of the Compensation Act," or words to that effect.

## Personal Inquiry Made

This study was made entirely through personal interviews with the owner, or manager, of the factory, so that certain inaccuracies which are apt to creep into reports based upon elaborate questionnaires sent by mail were to a large extent eliminated. In this connection it is interesting to know that, in the course of the conversation, every employer but one expressed the opinion that welfare work for employees had absolutely no effect on labor turnover or production.

In some cases, hospital care was available comparatively near by, but in three instances the nearest hospital was more than five miles distant. In one case the nearest hospital was more than twenty miles away.

In only one factory was any form of welfare activity encouraged. There was one factory, a steel company employing 210 employees, where athletics, dances, and annual picnics are financed in part by the employer.

It was estimated by employers that, in this group of 2,291 workers, there were 445 accidents every year. This figure errs on the side of conservatism because non-disabling accidents were, to a large extent, not included in the estimate.

If we examine the reports of welfare activities for large factories it is noted at once that, on the average, the

worker receives considerably more medical attention and a much greater interest is taken in his welfare in larger factories than in small factories such as covered by the above report.

For comparison a study was made of a single industry located in the same territory in which the above study was made. It was found that, although there are only a few hundred more workers than were represented by the above total, the preparation for medical attention was much more elaborate than was the combined medical attention for the above twenty-five factories. There were in this factory, of approximately three thousand employees, three first aid rooms with complete equipment, cots, stretchers, and necessary surgical supplies. There were a physician on part time duty, three nurses on whole time duty, and an additional nurse who worked as a substitute during part of the day, devoting the remainder of her time to public health work in the community. In a hospital near by the employer maintained three beds at all times for the use of the employees and their families. Except for the provision of compensation there was no actual promise of medical care of employees, but it stated that much actual help was given. There were numerous other welfare activities, such as rest rooms, club house, and athletic games. This employer, in contradistinction to the small manufacturer, said that he believed welfare activities increased production and caused a reduced labor turnover.

In the survey of medical care for industrial workers located in various communities in the eastern and middle western states, Selby<sup>3</sup> found, as a result of his investigations, that the smaller industries were, as a rule, not well equipped for the medical and surgical care of their employees. He suggests that every establishment employing anywhere from two hundred to five hundred people is warranted in having a dispensary and, further, that such an establishment is justified in having either a part time or full time physician on duty.

When such a physician is on a part time basis, his service may be advantageously augmented by a trained female nurse or by a person who has been taught to handle the routine work under the physician's direction.

## Large Factories Well Equipped

Dr. Selby found much better medical facilities in a number of larger factories. In nineteen establishments employing between 1,000 to 1,500 workers he found that more than one-third had whole time physicians. In seventeen of the nineteen places, there were well equipped dispensaries, and in all but one of these there was some trained person constantly in attendance. In still larger industries—employing from 2,000 to 4,000 employees—it was found that about half had full time physicians and that all but two had established dispensaries with a trained medical attendant constantly on duty.

In forty-five industrial establishments employing more than 4,000 employees there was only one which did not have a dispensary and only two that did not have either a part time or full time physician. The relation of the trained personnel to the employees is shown in Table I.

\*From the Department of Health Service, Atlantic Division, American Red Cross.

1. Burnham, A. C.: *Jour. Indust. Hygiene*, October, 1920.

2. From hitherto unpublished figures of an industrial study made by Prof. R. W. Foley, Colgate University, for the Health Service, American Red Cross, August, 1920.

3. Selby, C. D.: *Studies of the Medical and Surgical Care of Industrial Workers*, Public Health Bulletin, 1919, xcix.

TABLE I.—AVERAGE APPROXIMATE NUMBER OF EMPLOYEES PER INDIVIDUAL IN WHOLE TIME MEDICAL DEPARTMENTS

Number employed	Physician	Attendant	Clerk
500 and less .....	225	.....	.....
500 to 1,000 .....	462	800	325
1,000 to 1,500 .....	1,257	1,260	566
1,500 to 2,000 .....	1,198	2,350	1,400
2,000 to 4,000 .....	2,191	1,331	1,686
4,000 to 10,000 .....	2,695	2,350	2,600
10,000 and more .....	3,094	1,497	4,138
Average .....	1,632	1,598	1,786

From Table I it is apparent that the service of the physician reaches a greater number of employees in large establishments than in smaller ones. This is accomplished because, in many of the larger establishments, it is the custom to supplement the services of the physician by the employment of trained nurses. In addition, in large factories, one or more clerks may be advantageously employed for the routine clerical work.

Thus one large steel company, employing 30,000 workers, had for their total personnel: Four whole time physicians, one physician on call, twenty-six trained nurses, and four clerks. This is an average of about six thousand employees for each physician but less than nine hundred employees per unit of medical personnel. A large automobile factory employing 8,000 workers had five physicians, one trained nurse, and six experienced male attendants. This is an average of about 1,500 for each physician but only about 700 per unit of medical personnel. Another factory employing 18,000 had ten physicians, eleven nurses, six clerks—an average of 1,800 for each physician but less than 700 per unit for medical personnel.

Table II has been arranged to show in parallel columns the relation between the medical services in large and small establishments.

TABLE II.—COMPARATIVE MEDICAL CARE IN LARGE AND SMALL FACTORIES

	25 small N. Y. State factories small cities.	31 Nebraska em-players in city of 70,000.	1 large silverware manufacturer N. Y. State.	10 large factories from Eastern Middle States.
Total employees....	2,291	4,291	3,000	57,800
Av. No. employees	92	126	3,000	1,445
Full time physician	None	None	None	35%
Part time physician	None	None	One	45%
Physician only on call .....	96%	No record	Also one on call	30%
Dispensary .....	4%	21% have first aid rooms	Has 3 first aid rooms	90%
Trained nurse....	None	None	4	52%
Experienced attendant .....	8%	"several"	None	28%
No medical attendant .....	92%	No record	.....	7.5%
Dentist .....	None	No record	No record	10%

In the preparation of Table II no attempt has been made to take into consideration the character of the medical service. It is quite possible that in some factories employing a part time physician medical service might be better organized than in another establishment with a full time physician; but in general it may be said that a full time service is better than part time and this is in turn much more desirable than any form of service under which the physician is called only when needed. In the case of most factories employing less than five hundred employees it has been found impracticable to employ a full time physician. While a few factories of this size,

especially those in isolated communities, have built up a full time medical service, it is felt by most employers that the expense involved is too large to warrant the institution of any very elaborate form of medical care. In the larger factories having well equipped dispensaries the outlay for equipment is considerable. Even before the present high prices the necessary cost of equipment for an up to date dispensary with x-ray and laboratory equipment might easily exceed \$5,000. Today the price would be much more.

However, such elaborate supplies would not be required for a small factory. In many states the installation of a first aid kit with one or more trained assistants is required by law.<sup>4</sup> This equipment is rarely sufficient for more than the minimum emergency care and more complete equipment is desirable. Reasonably satisfactory equipment for minor surgical treatment and emergencies could be secured today for less than two hundred dollars, and five hundred dollars would secure a fairly well equipped physician's office. Of course in such cases arrangements for x-ray and laboratory examinations would have to be made at a near by hospital.

### What Service Is Required

In order to meet the requirements for medical and surgical service of smaller industries there have been several plans suggested. The author has already suggested<sup>1</sup> the establishment of community first aid stations in order to meet in part the demand for medical care of industrial employees.

Dr. Thomson, having in mind the requirements of a city of 70,000, suggests a cooperative industrial bureau with rather an extensive personnel consisting of an executive head under whom were directors of employment, insurance and medical care. For the treatment of employees he divides the bureau into two groups, the first of which is apparently a central group to which are attached a professional personnel consisting of physicians representing the various specialties, nurses, and attendants. The second group of professional personnel presupposes the division of the industrial work of the city into districts in each of which is a district surgeon whose duty it is, with the aid of a nurse, to attend the injured and sick in the various industries, referring severe injuries and doubtful ailments to group one for diagnosis, treatment, and hospital liaison.

Dr. Selby, in his study, also suggests a cooperative medical service for smaller industrial establishments. He calls attention to the fact that in some cities there are already being established organizations of employers of labor to furnish information in such matters as traffic, casualty insurance, and employment and he believes that this could be extended to cover medical service. In some cities from a strictly commercial standpoint physicians have organized a series of medical treatment stations in various districts of the city, in order to care for compensation cases. These have met with more or less success depending largely upon the personality of the physicians engaged in the enterprise.

4. N. Y. State Industrial Code, Rule 178 and 179: The New York Industrial Code requires that "in every factory employing more than ten persons, in which power driven machinery is used for manufacturing, there shall be provided a first aid kit at all times, free of expense to employees," and that "in every establishment where a first aid kit is to be maintained, at least one person shall be instructed by a physician or trained nurse how to apply first aid to injured persons and shall have charge of the first aid kit and its maintenance."

5. The American Red Cross Health Center, A. R. C. 1012, Sept. 1, 1920.

6. The per capita expense of a large shoe factory in New York state is approximately seventy cents weekly, or thirty-five dollars yearly per employee. Full medical attention is furnished to the employee and his dependents.

The experience of the Bush Terminal Company, in Brooklyn, has been most instructive. The Bush Terminal buildings are large reinforced concrete buildings so arranged as to house a number of manufacturers. The Bush Terminal Company has established a well equipped hospital on the ground floor of one of the buildings. The services of this hospital are available to every employee in the building or in the vicinity. While treatment is limited largely to compensation cases, it might easily be extended to cover physical examinations and treatment for sickness.

There are many locations in every large city where hospitals similar to the one at Bush Terminal might be profitably established. However, it appears that the chief difficulty is that the great majority of employers in small establishments have not reached the attitude of mind in which they are willing to spend sufficient money to maintain an adequate medical service. As there are probably in the aggregate many more persons employed in small establishments than in large, it would appear that it is necessary to reach and convince these smaller employers in order to start a cooperative plan of this sort from within the group.

### Cooperative Plan Feasible

The organization of such a cooperative plan from sources without the group of employers is apparently both feasible and practicable. It may arise from one of three sources: (1) physicians; (2) state; (3) voluntary organizations.

The inauguration of this plan from a commercial standpoint by physicians has already been mentioned. Several physicians, joining together, start a dressing station in the vicinity of a group of factories. They treat compensation cases for the regular fees and, in some cases, give additional medical care for a fixed per capita fee. In the main this plan is not considered desirable, as the results obtained are largely dependent upon the character of the men who start the enterprise and as the commercial element is apt to be so great as to defeat its own purpose.

The organization of a cooperative medical service by the state or the municipality is indicated by the fact that, in certain cities, the local department of health has already started industrial health stations. These, to date, have been limited largely to the study of industrial diseases and industrial hygiene, but they might be easily extended to cover accidents and general medical care of employees.

In small communities a cooperative medical service, in conjunction with a voluntary health organization, such as the American Red Cross or a local health organization, offers certain very definite advantages. As the cooperative plan may be said to be in the formative stage, it is much better that during this stage, which is to a certain extent experimental, the plan should be developed by a voluntary organization rather than by city or state. Mistakes in regulations and plans for administration are much more easily corrected in a voluntary organization than when under public authority. In addition, the participation of a well known organization, such as the Red Cross, would avoid to a large extent suspicion and distrust on the part of the wage earner. Even when inaugurated by the employers, welfare work is sometimes made difficult because of an ill-defined suspicion on the part of the employee.

The American Red Cross has inaugurated the policy of the establishment of health centers<sup>5</sup> for the dissemination of health information and education. In certain communities where there are no hospitals or dispensaries the health center is logically the community first aid station.

Through the medium of a cooperative industrial service it may frequently be possible to establish a Red Cross Health Center with a well equipped first aid room, for the service of the general public. In other words, the surgical clinic may be established as part of the health center and the surgical care of the injured in industry undertaken by physicians and nurses in the employ of the various industries, while the center as a whole is devoted to the needs of the general community. Naturally, the employers pay a proportionate part of overhead expenses of the health center. By this method it may be possible to locate a completely equipped emergency room in health centers in smaller cities, which might otherwise be omitted because of the difficulty of financing such a project. The intimate relation that such a center would bear to the injured workmen could not fail to react favorably toward the health education of the entire community.

In the carrying out of any plan for cooperative health or welfare work, the consideration of expense is of the utmost importance. It has been so difficult even in the larger factories to determine the exact cost of welfare work that it is doubly difficult to estimate the cost of installation of any form of cooperative health station. Dr. Harry Mock in an examination of a number of industrial establishments found that the expense for medical care varied from less than two dollars per capita yearly to more than seventeen dollars. This fluctuation to a large degree was due to the varying extent of medical care which was furnished employees.<sup>6</sup>

In a small community of approximately a thousand workers in several separate industries, a centrally located surgical dispensary with a nurse in attendance and a physician on part time duty might be run for a total of two or three dollars per year for each worker served. This would naturally be in addition to the physician's regular charges for treatment of compensation cases. If the per capita expenditure was increased to one dollar per month for each employee, the plan could be greatly extended so as to include visiting nursing in the home, dispensary treatment for illness, hospital care for certain cases and certain other welfare features.

### Dispensaries Cooperate

In smaller cities where there is no local hospital, it may be possible and practicable for the community to establish a cooperative dispensary, in part for the general public and in part for the special benefit of local employees. This would be financed by equitable contributions from the public treasury, from the local industries, and, in certain cases, from private individuals.

If we accept the theory that it is cheaper to keep an individual healthy than it is to cure him after he becomes ill, it is evident that cooperation for medical treatment tends to emphasize the advantages of preventive medicine. In an interesting experiment started by a large industrial insurance company it has been found that the introduction of a visiting nursing service for all industrial policy holders has apparently tended to lower death rates among policy holders. It would seem that some form of industrial medical service such as suggested above would not only diminish the total period of disability for industrial injuries but would act to raise the general health level of the wage-earner, thus benefitting the community as a whole.

Many people resent the fact that a contemptible microbe may kill a genius before he comes of age, and that paltry flies put a drag on the wheel of the chariot of civilization.—Thomson.



## SHOP STANDARDS AND FATIGUE\*

By BERNARD J. NEWMAN, CONSULTANT, UNITED STATES PUBLIC HEALTH SERVICE (RESERVE), PHILADELPHIA, PA.

SUFFICIENT progress has been made in the determination of the causes of industrial over-fatigue to warrant the introduction of plant programs for its control. To what extent the formation and adoption of these programs should be left to the initiative of plant managers or should be imposed upon them by governmental regulation of state or municipal origin may be a mooted question. That such programs, when scientifically determined, yield returns not only in better working conditions and in better wages for employees but also in larger profits in production for employers, cannot be doubted; that is, programs for the elimination of industrial over-fatigue, when based upon correct principles and constructed by experimental methods, are financially profitable to all concerned in industry today.

In making this assertion I am relying on recent determinations made in laboratory and field studies by researchers, largely officers or consultants of the United States Public Health Service or other researchers attached to the English Health of Munition Workers' Commission, as to the causation and control of fatigue.

### The Term Fatigue Is Defined

Fatigue may be defined as an inhibition placed on body activity because the capacity to function has been, for a temporary period at least, reduced or broken down as a result of an output of bodily energy in excess of that compatible with normal functioning. It may be a "diminished capacity for work which is the result of previous work," as Prof Frederic S. Lee<sup>1</sup> phrases it—a definition which he points out has its decided limitations; or it may be the "sum of the result of activities which show themselves in a diminished capacity for doing work," as Sir George Newman<sup>2</sup> defines it. To restrict the definition to work activities would not be scientifically accurate, as other causes play a part, varying in scope and in degree. These causes, which we will consider more in detail later on, must not be minimized.

Industrial fatigue is concerned primarily with conditions which arise within industrial establishments or in industrial processes, responsibility for the elimination of which rests primarily with the establishment, and gains from such elimination necessarily accrue to the establishment first and to society afterward. In the absence of specific designation of other fields of fatigue causation, reference hereafter in this paper will be industrial over-fatigue.

To appreciate the fatigue problem in industry and to determine an acceptable program for its elimination or

*Undue fatigue, wherever it occurs, must be regarded either as a symptom of disease, a sign of misdirection or waste of energy, or a reliable index to unhygienic working conditions of shop or factory reducing the efficiency of the worker.*

*If adverse mental processes are responsible for over-fatigue, the remedy is a question of placement, of fitting the worker to his job. If the tired feeling cannot be charged to maladjustment, then diagnosis, treatment and better adaptation are in order. If the fatigue results from air poisoned from processes of manufacture, or vitiated from overcrowding; from monotony, or speeding up—then it may be said to involve society collectively and must be charged to industry as a social wrong.*

*Data are not complete for all industries, but sufficient study has been made to correct the more serious inroads on the welfare of the workman.*

reduction to the point where it neither retards production nor increases the cost thereof, we must arrive at a common understanding of the physiological changes in the body as a result of prolonged muscular activity.

Life is a continuous process of metabolism. Constituent parts of food taken into the body are distributed to the cells, where they are converted into protoplasm or furnish fuels in easily oxidizable form for the generation of heat and energy. At the same time there is going on within the body as a result of its activities a change of

matter into lower forms no longer serviceable to life, the waste products of activity. The strength and activity of the body,—the health of the body,—depend upon the adequate supply of food and oxygen to the cells and the activity of the cells in the transformation of this food in the processes of anabolism into living protoplasm or its oxidation in the production of heat and energy; but they also depend upon the removal of the waste products of katabolism, i. e., of destructive metabolism constantly going on, in intense muscular activity more so than at other times, into lower forms finally to be eliminated as waste. If as the result of energy output the balance between intake, output, and waste removal is no longer maintained, retardation in the elimination of waste products takes place and fatigue results.

When, therefore, the statement is made that fatigue is due to long continued use of a muscle or group of muscles, what is really meant is that in the constructive and destructive metabolism of the body such activity on the one hand creates in the muscle such waste products as carbon dioxide, lactic acid, or possibly other metabolites characteristic of fatigue. Thus there is a chemical change. Moreover, this muscle-waste, accumulating faster than it can be removed, causes what corresponds to a clogging of the muscle, and diminishes the amount of oxygen and glycogen supplied thereto; thus the cells are unable to function satisfactorily, for it is to be remembered that coincident with muscular contraction there is a consumption of oxygen and oxidation of glycogen. A muscle starved of these supplies ceases to function normally and fatigue is produced.

In the functioning of the body all parts are interrelated. A strain on one organ may ultimately reflect itself upon others. One set of muscles over-exercised requires from heart, lungs, the glands involved, and from the nervous system anabolic assistance. The blood and lymph, overcharged with waste in the attempt to remove the katabolic products of the overworked muscles, distribute to the rest of the body these waste products and induce throughout the signs and symptoms of the originally tired muscle. Fatigue then becomes general.

This brief explanation of the physiological basis of fatigue has purposely omitted several modifying factors.

\*Read before the Ninth Annual Safety Congress, Women in Industry Section, Milwaukee, Wis., September 29, 1920.

1. Kober and Hanson: Diseases of Occupation and Vocational Hygiene, P. Blakiston's Son & Co., Philadelphia, 1916, p. 249.

2. Reports of the British Committee, Ministry of Munitions, on the "Health of the Munition Worker," p. 16.

The effect here assigned does not come in a straight line from the cause. General fatigue may not appear, although the exercised muscles may themselves be fatigued. Before the effect is transmitted to the other parts of the body, a rest period may elapse wherein the blood and lymph may remove the excess waste and restore the working power. This is the normal method of functioning the body, and rest is the great restorer of the "tired-out" person.

In the presence of fatigue the body possesses within itself powers of momentary restoration. Witness the reaction of the soldier on a hike to the rhythm of music, or the football player or the Marathon runner to the presence and cheers of the crowd. There is evidence sufficiently authentic to establish the fact that excitement may remove temporarily the chemical cause of fatigue. Cannon<sup>3</sup> states that emotional excitement tends to stimulate the discharge of adrenin, a vasomotor stimulant secreted by the adrenal glands. He points out that adrenin "is able to bring a rapid recovery of normal irritability of muscle after the irritability has been lessened by fatigue." "What rest will do only after an hour or more, adrenin will do in five minutes or less." By it the strength and rapidity of the heart beat are increased, the blood is driven through the fatigued muscles, carrying away thereby the waste products which inhibited their freedom of action.

### How Fatigue Is Manifested

Strange as it may seem, it is not always easy to tell when fatigue is present, because its symptoms may be masked. "That tired feeling" which is advertised against, if experienced, does not necessarily register fatigue, but may be a symptom of other diseases. There necessarily follows work a normal amount of weariness which is healthful and makes a well earned rest enjoyable. This readily yields to rest. There is a fatigue that attacks a muscle quickly, following undue exertion. There are certain symptoms which the diagnostician groups in his effort to segregate the type of disease afflicting his patient, seemingly well phrased by Dr. Kober: "The general effect of overwork and chronic fatigue are characterized by loss of appetite, anemia, digestive derangements, respiratory and cardiac affections, fatigue neuroses, neurasthenia, and general deterioration of health." Over-fatigue may be present to the extent of producing symptoms without the subjects being aware of the true cause. It may appear in irritability, in errors of judgment, in mistakes, or in retardation of thought due to lapses of memory.

However, the important facts to remember are that over-fatigue has a causation resting upon the physiological processes of the body; that its presence is sometimes cloaked; that a failure to recognize its social and industrial causes, as a first step in a plan to eliminate them, often results disastrously to the individual and to industry.

### The Cost of Fatigue

Fatigue costs may be expressed in terms of the effect upon health, longevity, safety, labor supply, employment stability, industrial contentment, productive efficiency,—*i. e.*, alertness, speed, accurate work, minimum waste,—as well as output and profits. Evidence to support the foregoing will not be introduced here. Certain facts, however, are illustrative. Recent studies of the working conditions of the foundry trades made by the Office of Industrial

Hygiene and Sanitation of the United States Public Health Service show that where the molders work at piece work there are a greater number of physical ills than where they work at day work, other factors not differing to any marked extent. It is a reasonable postulate that where excessive fatigue is produced and prolonged in labor for any length of time, vital resistance is reduced and the body is less able to resist disease. It is a noticeable feature of production studies that the maximum depression of the output curve is reached after the middle of the shift, although in shops where there is a definite attempt to limit output, the production curve often does not show any material change at any time during the day.

In two plants working on an eight and a ten-hour day respectively, where intensive studies were recently carried on by the Public Health Service, it was a noticeable fact that "while in the final hours of the day accidents fell with the decline of output," yet the presence of over-fatigue interfered with a parallel decline. There was, in the ten-hour plant, a greater rate of fall in production than in accidents, the accident ratio for such plant actually increasing; that is, although both accidents and production decreased, yet the decline of accidents did not keep pace with the decline of production making the number of accidents in proportion to the number of pieces produced greater in the last hour than in the previous hours.

As in case of over-fatigue and sickness so in over-fatigue and decreased production, the cause and consequence are practically self-evident, not needing citations either to illustrate or to demonstrate. Indicative though, of the data here, is Dr. H. M. Vernon's report<sup>7</sup> on some experiments which he conducted in a tin plate plant in South Wales. The workers were lifting weights of forty to eighty pounds by long tongs in a temperature of 110 degrees Fahrenheit. They worked in five or six shifts of eight hours each. Plant conditions forced changes of shifts at times to six and four hours respectively. When the work results were analyzed it was found that when three of the eight-hour shifts were distributed into six four hour shifts, the production increased 115 per cent. The American Committee studying fatigue during the war found that the output in one large munitions plant was practically *nil* during the last hour of a twelve-hour night shift. The English Committee working in the same field found among a selected group of employees an increase in production of 9 per cent when the working hours were dropped from 62.2 to 45.6 per week; while with another group a change from 58.2 hours per week to 51.2 increased the output 21 per cent.<sup>6</sup>

In a discussion of economic losses from over-fatigue a writer recently gave a mass figure which challenges consideration, not because of any proof of its accuracy so much as because it is both spectacular and logical. He estimated the loss from fatigue to the nation as not less than twenty cents per worker per day per year. In order to grasp the significance of this apparently slight loss, recall that the Bureau of Census estimates there are about forty million workers in the United States. The normal working year is three hundred days. On the basis of this estimate the monetary loss to the nation from over-fatigue would approximate \$2,400,000,000 per year. Translated into lost time, allowing an average wage of five dollars per day per worker, which is a high average, all workers considered, this would mean a lost time from production of the equivalent work of 1,600,000 workers for one year. If one were to carry this out further and

3. Cannon, W. B.: Bodily Changes in Pain, Hunger, Fear, and Rage, D. Appleton & Co., New York, 1920, p. 129.

4. *Ibid.*, p. 133.

5. Kober and Hanson: Diseases of Occupational and Vocational Hygiene, P. Blakiston's Son & Co., Philadelphia, 1916, p. 117.

6. Public Health Bulletin No. 106, p. 117.

7. Vernon, Dr. H. M.: Industrial Fatigue in Tin Plate Manufacturing, Engin., October 10, 1919.

count in all the losses in sickness and accidents, to which fatigue is a predisposing or exciting cause, as well as those other losses due to turnover because of the disinclination of certain groups of workers to do hard work, the dissatisfaction which leads to sabotage and like losses, to the incidence of which fatigue is a contributing cause, then the drain upon society and upon the industrial group in society would amount to almost unbelievable totals.

Based on the capacities of the workers and not on the capacity of the machine, there is apparently in plant production a law of diminishing returns for energy spent, and a point is reached beyond which labor becomes less profitable. However, the massing of the probable losses in such a spectacular manner, while undoubtedly trustworthy and attendant upon or resulting from a lack of appreciation of the law of fatigue, does not convince the individual employer of the need to analyze his own plant. The loss is a national one which warrants a nation-wide preventive program. The problem which it presents to the average employer, alike important to the employee, is how so to control fatigue-producing conditions and processes as to enable efficiency to be maintained at a minimum cost in health and welfare to the worker and to the state.

### Tests of Industrial Fatigue

It may be rightly assumed that the foregoing conclusions are founded on scientific determinations. These determinations have not been made by one set of researchers nor confined to one school of thought.

In the United States physiologists and physiological chemists attached to leading universities have been and still are experimenting in this field, originating and developing standard tests for the determination of fatigue and the analysis of the physiological and chemical changes accompanying fatigue. In industrial plants and elsewhere practical efforts are being made to devise ways to measure abnormal fatigue and to eliminate it. There is an extended literature<sup>8</sup> on this subject. Some publications are wholly theoretical, while others deal with tests made and results obtained. The examples here given are illustrative only of types of researches pursued.

### Experiment With Typical Tests

These types may well be divided into at least four groups: (1) Laboratory tests touching physiological, chemical, and bacteriological reactions to labor causing over-fatigue; (2) factory tests in regard to production; (3) physical tests upon employees to determine their capacity for arduous labor; and (4), a miscellaneous group including all tests of other character.

### Laboratory Tests—Treppe

In the first group will fall tests made with animal muscle. The muscle given a definite load to carry is periodically stimulated by slight electric shocks and undergoes a successive contraction and expansion as shown in varying wave lengths when graphed. Such a muscle, functioning somewhat as in the body, gives a curve with a treppe similar to that formed by the production curve in an output study; that is, there is a slight climb, followed by a steady decline after the peak has been reached. Coincident with this activity a waste product is created which, under continued muscular activity, inhibits action and causes the decline shown in the curve. Under chemical tests this waste gives a lactic acid reaction. Other waste products are also distinguishable. The interesting

feature of this test is not only that it so closely followed the production curve of muscular work in a factory in the early rise followed by a decline, but that when the muscle is washed with a salt solution, the waste is removed, and the ability to function again is restored. Too close an analogy between the laboratory experiment and the normal function of the industrial workers in the plant cannot be made, for the former is not controlled by a directing will as is the latter and cannot simulate greater or lesser activity by a control of the output. Many experiments have been made from time to time in a similar direction to determine the nature of the fatigue producing substances found in the muscles.

### Changes in Blood and Urine

Scott<sup>11</sup> summarizes a number of kindred experiments made by such men as Lee, Burridge, Tisse, Fletcher and Hopkins, Ranke, as far back as 1865, Garrett, Colvin, Dunlap, and others. Laboratory studies of live animals were made by Hastings<sup>12</sup> to determine the possible relation of the bound CO<sub>2</sub> in the blood to fatigue. Dogs were made to run in a treadmill at a ten-mile rate until fatigue was induced. "Blood was drawn from the jugular vein," Hastings states, "without exposure to air, oxalated and centrifuged. The reaction of the plasma was determined electrometrically with a Clark electrode. In all cases a fall in the bound CO<sub>2</sub> followed exercise." While the extent of the fall varied with individuals, yet repeated tests of the same subject yielded practically the same fall under the same approximate amount of exercise. Hastings made further tests to determine whether a urine examination would yield data for measuring fatigue. He made observations upon Marathon runners, bicycle riders, and surgical patients resting in bed while recovering from simple operations. The results, which showed slightly higher acidity among those who had been through strenuous exercise than among those who had been resting, were nevertheless of little value. In subjects intensely fatigued the hydrogen-ion concentration of the urine invariably showed an increase.

### The Incidence of Bacteria

The effect of fatigue in the incidence and severity of bacterial diseases is shown in the experiments of Emery.<sup>13</sup> While rats fatigued by a revolving cage were exposed to anthrax they showed more susceptibility than other rats similarly exposed, but which had not had their resistance broken down by excessive labor. De Sandro made similar experiments with dogs, guinea-pigs, and rabbits, according to Rosenau,<sup>14</sup> who adds: "Under the influence of chemical changes induced by the physical strain . . . the defensive powers were much weakened; phagocytosis was reduced, and also the chemotactic power of the cells, the bacteriolycina, antitoxins, agglutins, and opsonins showed a marked falling off."

### Fatigue and Muscular Tonus

Dr. A. H. Ryan<sup>14</sup> has experimented with an apparatus for recording the tension needed to cause a given extension of certain groups of muscles, hoping thereby to ascertain the effect of working conditions, such as hours of labor and work processes. His apparatus for testing the pectoral muscles consists mainly of metal slings, with cord

8. Reprint No. 442, United States Public Health Service.

9. Goldmark, Josephine: Fatigue and Efficiency. Also Jour. Indust. Hygiene, 1919, i, No. 1, p. 42.

10. Public Health Reprint No. 465: The Present Status of Our Knowledge of Fatigue Products.

11. Hastings: Reprint No. 546: An Investigation of the Changes in Blood and Urine.

12. Emery: Immunity and specific Therapy, 1909.

13. Rosenau: Preventive Medicine and Hygiene, D. Appleton & Co., 1917, 405 ff.

14. Ryan, Dr. A. H.: United States Public Health Service Reports, July 25, 1919, p. 1622.

and pulley, and a spring balance delicately adjusted. He found that strenuous, long continued work decreased the muscle tonus; also short, hard, heavy work gave a quick decrease in tonus; i. e., in the readiness of the muscle for ordinary work under normal stimulus. Loss of sleep reduced tonus. Excitement overcame the effects of heavy work, this result having also been noted in connection with the analysis of the effects of adrenalin.

### Tests of Factory Output

Factory tests are more familiar to the average person. They range from the simple output tests where the quantity of production is determined on an hourly, daily, and weekly basis. Automatic registers indicate the output for any selected period. The output test is not always indicative of fatigue. Even a decline in the output curve does not tell the true story, unless along with it is taken a power consumption test. Florence and Ryan<sup>15</sup> have clearly shown that the latter is best made when the machine has its own motor, rather than power furnished from a central system and shafting. As previously stated, output curves may be discarded where soldiering on the job is practised, except perhaps as an index of such possible soldiering.

### Spoiled Work an Index

Another test which has been used to corroborate the output test is that of spoiled work. With decrease in attention goes an increase in mistakes, as shown in the number of discards in the total product.

### The Correlation of Accidents

From previous statements it will be recalled that there is a correlation of accidents, absenteeism, turnover, and fatiguing labor. In two factories where comparisons were possible workers on ten-hour shifts showed an absentee record of 3.15 per cent of the total working time, while in other factories on an eight-hour shift the percentage was only 1.53 per cent. Some factors were not eliminated here which are responsible perhaps for a greater difference than really exists, but the figures approximate accuracy sufficiently to make the data comparable.

### Cinematograph Studies of Motions

Cinematograph records have been taken for the purpose of eliminating unnecessary motions. When such eliminations enable the employee to establish rhythm in his work, with the intermittent interruptions in the continuity of the operation, fatigue seems to be correspondingly reduced. Florence and Ryan<sup>16</sup> suggest, as the result of tests made with the automatic rhythmometer, that rhythm, while maintaining the output curve to the end of the day in a lathe operation, yet seemed to mask fatigue. Physiological tests apparently indicated the presence of fatigue notwithstanding it did not assert itself in restricted production. Their test is described further on.

Industrial engineers are conversant with the adaptation of the principle of this test in the program of scientific management as set forth by Taylor in his standardized motions and regularized rest intervals for jobs of certain types.

### Tests on Physical Basis

The more important tests as to practical value are those to determine the capacity of the worker for the job. These are: Mental, for intelligence, accuracy of judgment, and alertness; physical, for past history as to defects, and

for present complaints and current sickness. Such tests roughly indicate the presence of fatigue or the need for more intensive investigations into fatigue creating conditions.

### Muscle Tests

E. G. Martin<sup>17</sup> has tried out muscle tests for determining body strength. These tests are made in working clothes. A spring balance registers in pounds the strength of eight important muscle groups, and this record is converted into an index of physical working capacity by multiplying the total by 6.67. For effectiveness the test requires a job analysis, setting forth the body strength needed for each job and arrived at by averaging the strength of a group of workers on similar jobs. By making records over a more or less extended period, eliminating those engaged in such work but unfitted for it, as shown by later physical re-examinations, a standard and minimum strength below which it is unsafe to go is ultimately ascertained. Dr. Spaeth would improve this test by a formula which is a ratio to be obtained by dividing the strength total by the weight. Thus, workers of given weights would have to register a ratio corresponding to that established for the mean group.

### Miscellaneous Tests Employed

Among the tests now being perfected the test of rhythm promises results which may seriously disturb previous opinions. Almost every writer on fatigue mentions monotony, or constant repetition of the same task, as the cause of fatigue. Florence and Ryan<sup>18</sup> have made some tests of the effect of rhythm in industry. In measuring rhythm they attached an automatic rhythmometer to the machines. A signal magnet recorded variations. A mean was obtained by graphing the time and the output of a selected number of workers. A coefficient curve was made for a comparison of rhythm. Certain attempts were made to find modifying conditions which would interfere with the rhythm. They have summarized the results of their test as follows: (1) "By relieving attention" of the worker to his task, rhythm helps to reduce fatigue in the day's work"; (2) "by rendering more uniform metabolism and by the recovery involved in the operation" the effect of the work is more evenly distributed; (3) "by masking fatigue effects" more even distribution of output is obtained; and (4) by uniform motions and eliminating unnecessary motions, accident frequency is reduced.

### Industrial Causes of Over-Fatigue

Manifestly, fatigue is a physiological reaction that can be measured, though there are many refinements in measurement which must be worked out in the laboratory and in the plant. It is true that the physical condition of the worker, his habits, and his activities outside the plant have a marked influence on his reactions to working conditions. If injurious, they make the effect of plant fatigue processes more acute. For this reason industry cannot be charged with responsibility for all cases of acute fatigue; but the working conditions and processes causing extraordinary fatigue can be segregated, and will yield to plant program for their correction. Such a plant program, which may be expressed in terms of shop standards, will include features to correct both the direct and indirect causes of fatigue. Distinction between these types of causes is made in that those grouped as direct, acting immediately upon cell life of the muscles intimately involved in the process of labor, create within the cells

15. Florence and Ryan: Comparison of an Eight-Hour Plant and a Ten-Hour Plant, Public Health Bulletin No. 106.

16. Florence and Ryan: Public Health Bulletin No. 106, p. 210.

17. Martin, E. G.: Strength Tests in Industry, Public Health Reports, August 13, 1920.

18. Florence and Ryan: Public Health Reports, 1919, xxxiv, No. 30.

the waste toxins previously referred to, thereby inhibiting their normal functioning. Those classified as indirect react upon the normal functioning of the organs of the body, and by inhibiting such normal functioning, ultimately interfere with the activity of the muscles necessary in the performance of the particular occupation in which the work is engaged.

### Direct Causes of Fatigue

To summarize, the working conditions which may be classed as direct factors in fatigue causation are of such types as are commonly associated with muscular strain and which arise from continuous lifting, as in the case of laborers loading pig iron all day; or from long standing, as with bench hands on filing or weavers operating a dozen or more looms; or among employees engaged in processes where they labor in cramped positions, as garment workers; and workers who have a hard, continuous use of the same set of muscles, such as operators by foot power or sewing machine. To this class also belong those operations calling for continuous sitting in faulty postures which interfere with metabolism—usually on poorly designed chairs—as with clerical workers, accountants, and tobacco wrappers, as well as those other operations where the hours of labor are long and the work is continuous without intervening days of rest, or where the work is characterized by monotony without the relief afforded in rhythmical action. But the direct causes of fatigue include activities in places where muscular effort is not only imposed by the job itself, but such tasks or others in their vicinity produce excessive noises, as in the case of riveters using pneumatic hammers which tend to affect injuriously the delicate mechanism of hearing and possibly aiding in inducing fatigue in the body by the vibrations incident to the processes which give forth the excessive noises. Included in such direct causes are excessive temperatures with high relative humidities, as in mines and laundries, or fluctuations in temperature with extremes of heat and cold, as in steel mills or pickling rooms. Furthermore, such working conditions include occupations where light intensity, gloom, or glare, all fatigue the worker through eyestrain.

### Indirect Causes of Fatigue

The foregoing classification of the direct causes of fatigue is intended to be illustrative and not a complete list of factory operations having this undesirable result. There are other causes of fatigue which, for the lack of a better term, we characterize as indirect; these arise from such working conditions as are found in operations creating air dustiness,—that is, in abrasive manufacturing, grinding, polishing, and sand-blasting. Here fibroid changes in lung tissue occur, restricting the normal function of the lungs or making them more fertile soil of tuberculosis. Similar operations creating fumes, gases and poisons too numerous for illustration, break down cell life, create undue amounts of waste, and overcharge the processes of waste removal in such wise as to inhibit normal functioning. To these indirect causes of fatigue may be added inadequate and insanitary toilet and drinking facilities; the absence of rest rooms for women workers or rest periods for operatives engaged in heavy labor; unsympathetic management, unattractive or repulsive work-rooms, accident hazards; congested occupancy of work-rooms, which facilitates the spread of epidemic diseases and unscientific placement of employees. But perhaps a factor as great if not more important than any other in contributing to industrial fatigue is the absence of industrial hygiene and provisions for medical and surgical re-

lief to provide for the physical welfare of employees, to note, reduce, or correct physical disabilities, or to treat minor ailments not sufficient to debar the worker from employment, yet capable of retarding maximum production.

### Fundamentals of a Plant Program

These, as we have just said, are examples, only, of working conditions common in varying degrees to all industries, which fall within the groups of direct and indirect causes of fatigue, and which readily yield to a program when the management is alive to the importance of the human factor in production.

If a plant program is to be adopted, at least three steps are essential. I have discussed these at other places, have seen them tried, and have yet to find them wanting. First, there should be a physical examination of all applicants for employment, in order that their physical capacity may be known to the employment director, this examination to be followed periodically by re-examinations and replacements according to the health of the worker. This physical examination is in addition to the usual training and experience examination. Second, there should be a physical examination of the jobs, to find just what mental and muscular ability is required for maximum efficiency in output. Third, there should be a physical examination of the plant, to discover the working conditions which may injure the health of the worker, increase unnecessary fatigue and reduce output.

From such plant self-knowledge and from the program which it suggests, humane working conditions and mutual profit accrue to employer and employee.

### OCCUPATION AND TUBERCULOSIS

Diseases of occupation are everywhere assuming more and more importance, according to George M. Kober, M.D., in *Public Health Reports*, and it becomes a public health problem to determine by thorough study the relative health risks of the several industries and to formulate rules for the removal or mitigation of existing evils. Persons habitually engaged in hard work, especially indoors, present a greater amount of sickness and a higher mortality than persons more favorably situated, and the character of the occupation may influence the prevalence of certain diseases. Sickness, hurry, worry, chronic fatigue, loss of sleep, vice, and dissipation, insufficient and improper food, insanitary homes, lack of pure air, all favor the development of tuberculosis. The latest occupational mortality statistics for the United States show that the mortality from tuberculosis in agricultural pursuits was 8.7 per cent; among bookkeepers and accountants, 22.5 per cent; and in servants and waiters, 27.4 per cent.

A study is made of proportionate mortality in specified industries from tuberculosis of the lungs brings out the importance of such factors as physique, habits, exposure to dust, social conditions, and standards of living, and but serves to emphasize the importance of personal hygiene and general sanitation, as applied in the homes and work-shops of the Nation.

If we find upon candid examination, that even under self-direction, there is still much machine work which offers no outlet for creative energy, we can vary the work. And we can shorten the work day to a point where a compensatory leisure can offer the time needed to foster healthy activity which is interesting and spontaneous.—Ordway Tead.

# DIAGNOSIS AND TREATMENT OF DISABILITIES OF THE BACK\*

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WITH the extension of compensation laws which are now in force in forty-two states, four territories, and under the Federal Government, physicians are seeing many more injured cases early as a result of the working of the medical provisions of these laws. Just what percentage of these injured workmen represent injuries to the back is not available, but it must be large. Besides seeing the cases earlier as a rule, there is a greater responsibility and necessity of making an accurate diagnosis in any given case in order to give the insurance companies or the state departments having jurisdiction a clear idea as to the nature and extent of the injury, and also its probable duration in terms of disability. This is not easy to do.

Before taking up the so-called traumatic injuries to the back as the result of these industrial accidents, it is important to consider the not uncommon types of painful

ments. The center of gravity falls in a line running from the tip of the mastoid through the front of the shoulder, great trochanter, just back of the patella, and about an inch in front of the external malleolus. Any variation from this normal poise implies muscle and ligamentous strain and resulting pain; therefore, when a person habitually stands with the body in a position of poor posture there is created a lack of normal muscle balance and, consequently, a muscle strain which is translated into pain.

The so-called "carrying posture" is a good example of poor standing position, and is often seen in enteroptotic individuals. The trunk is carried back over the pelvis, the dorsal convexity is increased, and the lumbar spine is hollow or flattened. The abdomen is protuberant or may be scaphoid in type. Backaches are not uncommon in young women with a physiological lateral curvature of the spine associated with a round, hollow back and forward shoulders, and in such patients it is generally easily relieved by adequate exercises.

Other types are seen in women, especially those who present marked hollow backs, with a marked increase in the normal inclination of the pelvis. Such patients often present tenderness along the back muscles over the sacro-iliac joints, and complain of stiffness and a "wooden feeling" in the legs. This is all due to muscle strain and may be relieved by proper support by corsets, reinforced, if necessary, by a belt or extra steels, and in many cases relief is afforded by stretching the tight and contracted heel cords which take part in the general muscular hypertonicity. This stretching may be accomplished only by means of the so-called Shaffer stretching shoe.

Many indefinite backaches which fail to clear up under ordinary treatment are relieved at once by raising the heels of the shoes and by the previously mentioned stretching. High heels are not always the curse that they are made out to be, for by raising the heels the body is tipped back and so relieves the strain on the tense back muscles and hamstrings.

Another source of backache, often persistent, is that due to inequality in the length of the legs. In all patients who are examined for backache the legs should be measured and the degree of trunk displacement should be noted. A short leg is a frequent and often unrecognized cause of backache, and many such cases get early relief by making the short leg longer, or as long as the other one, by means of a lift on the shoe. Any flat foot, or pronated foot, should, of course, be corrected.

Sacro-iliac strain or sprain is a popular diagnosis which means nothing, as a rule; and, while the condition does exist, is not nearly as frequent as one would suppose. Relaxation and displacement of these joints do exist, and actual motion of these joints has been frequently observed, but that all low backaches should be due to so simple a cause is not the luck or "run of the mine" of the practice of medicine.

Simple strains or sprains may be generally easily relieved by strapping, extending it well around to beyond the anterior superior spines on either side, a large felt pad being placed over the hollow of the back and sacrum



Fig. 1. The fracture of the third lumbar vertebra in this patient was the result of a fall from a roof.

and irritable backs so frequently encountered. These can be divided roughly into three classes, namely, (1) poor posture or static backaches; (2) those due to pelvic disease or abnormality in women; (3) those resulting from disease, such as arthritis, tuberculosis, etc., of the vertebrae. These groups will be discussed in the order named and an attempt will be made to bring out the essential points.

## Backache from Postural Strain

Under this classification we must also include the cases which are called sacro-iliac strains. Static or postural strains are not the result of trauma, but of the constant muscular strain, and over-use superinduced by an habitual bad position, and may be attributed to definite mechanical and bodily defects. Normally, an individual in the upright position, when at rest, is supposed to carry the weight on his bones and not on his muscles or liga-

\*Read before the Nashua, N. H., Medical Society, June 1, 1920.



The strapping should be tight, especially between the trochanter and the crest of the ilium. Manipulation with or without anesthetic will often reduce at one attempt early displacements. Old ones often take care of themselves by gradual bodily readjustment.

Associated with these sacro-iliac strains or displacements there is often a sciatica. In fact, many low dorsal discomforts are manifested early by sciatica, more or less severe, generally clearing up following the adequate treatment of the primary cause. Sciatica by itself is a rare condition.

One other condition seen occasionally, and not so rarely as to be worthy of mention, is spondylolisthesis, or a slipping forward of the body of the fifth lumbar vertebra on the first sacral body, with a tilting forward and downward of the body of the fifth. This condition may be static or traumatic in origin, and usually leads to great discomfort. The treatment is adequate fixation, either by operation or by a backbrace. Certain severe types of this condition may lead to partial paralysis of the legs. It is a condition described by Sir Arbuthnot Lane as of very common occurrence in coal heavers. An examination of the back in these cases shows, usually, a marked shelf at the top of the sacrum. The fingers can be placed upon the top of the back edge of the first sacral vertebra, and the lumbar spine above seems to have been moved forward as a whole.

There is another type of static posture and backache known as camptocormia or bent back, which has recently been described by Hall.<sup>1</sup> It has also been described by Saliba<sup>2</sup> under the name of antalgic spinal distortion. There is no definite pathology, but the condition is manifestly hysterical, usually following trauma or mental shock, and results in the individual going about with the body flexed at the hips, or displaced laterally. Mental suggestion usually results in an early cure.

#### When Pelvic Organs Are at Fault

Taking up Class 2, those cases in which the pelvic organs in women are at fault. Graves<sup>3</sup> has shown that 76 per cent of 500 cases with retrodisplacement of the uterus had backache. A corrective operation relieved or benefited 86 per cent of 263 cases.

MacFarlane<sup>4</sup> states that 16 per cent of gynecologic cases complained of backache. The pelvic findings in 159 of these cases comprised chiefly lacerations, retroversion, prolapse, and such inflammatory conditions as adherent appendages and endocervicitis. The incidence of marked nervousness in these 159 patients with backache was about 9.5 per cent, or about equal to the incidence of adherent appendages, and half as frequent as that of prolapse. She thinks that the neurasthenic state predisposes to backache of pelvic origin by lowering the resistance of the central nervous system. The fact that the backache was permanently relieved by appropriate gynecologic treatment has led to the belief that these backaches are caused by the pelvic condition. Uterine or pelvic backache is invariably confined to the sacral or very low lumbar regions.

The common causes of backache in this class fall naturally under the following headings: arthritis, tuberculosis, osteomyelitis, carcinoma, sarcoma, back strain, and sprains, contusions, fractures of the transverse process, or fractures of bodies of the vertebrae.

(1) *Arthritis of the spine.*—This condition is often seen

and is a painful and persistent condition. It has its periods of remission and exacerbation, until such a time as the vertebrae become fused by extension of the process, when the painful joints in the spine no longer exist and the cause of the pain is removed, namely, motion between



Fig. 2. This patient exhibited a fracture of the first lumbar vertebra, causing partial paralysis of one leg, resulting from a fall of twelve feet.

irritable joint surfaces. This condition generally exists with other definite signs of arthritis, may occur spontaneously, or may be present even without symptoms until some strain or trauma stimulates the process and results in great and persistent disability.

Arthritis of the spine is of most frequent occurrence at or after middle age, and is apt to appear in the laboring man as well as the desk worker. It is not uncommon on taking an x-ray of a laborer's back subsequent to an injury to find a considerable degree of hypertrophic



Fig. 3. In this injury the patient fell headlong downstairs, and the fracture dislocation shown in the fourth and fifth cervical vertebrae.

arthritis already present, the process having been aggravated, at least symptomatically, by the accident.

Treatment in these arthritis cases generally resolves

1. Hall, G. W.: Camptocormia, Jour. Am. Med. Assn., 1919, lxxii, 547.  
2. Saliba, J.: Antalgic Spinal Distortion, Jour. Am. Med. Assn., 1919, lxxii, 549.  
3. Graves, W. P.: Am. Jour. Orthop. Surg., 1917, xv, No. 12.  
4. MacFarlane, Catharine: Jour. Am. Med. Assn., 1917, lxxviii, No. 13, p. 1000.

itself into the application of a plaster jacket, a back brace, a canvas corset, any one of which may have to be worn for an indefinite period in order to insure adequate fixation to the spinal joints. A diagnosis of arthritis of the



Fig. 4. This fracture of the third lumbar vertebra resulted from a fall of twelve feet.

spine without an x-ray in a given case is not impossible and at times easy. The back is stiff to bending in any direction, the onset may be sudden or gradual, and the disability is great. The cause may be infectious or occupational. The progress towards recovery is slow, even with good treatment.

(2) *Tuberculosis of the spine.*—This complication is common in children and rather easy of diagnosis by the presence of history, spasm, pain, guarded gait—the so-called military gait—and the presence of a kyphos. In an adult the history is not as suggestive. There may or may not be a kyphos, but it is usually noted if the vertebral destruction has gone on far enough. There are persistent pain in the back and weakness in the legs, even to a beginning paralysis, increased knee jerks, Babinski, and ankle clonus. The iliac fossa should always

be examined for the presence of a psoas abscess. The treatment is rest in bed on a frame or in a plaster shell, employing later an adequate jacket or brace treatment. The prognosis in adults is not as good as that in children. It is not an unusual disease in adults and its possibilities should not be forgotten.

(3) *Osteomyelitis of the spine.*—This disorder is not frequent. It may, however, follow after primary osteomyelitis foci or general septic infection. Carcinoma and sarcoma destroy the vertebral bodies in much the same way as tuberculosis. Sarcoma may be primary, and I recall having seen one such case this past



Fig. 5. A fall of fifteen feet resulted in this injury to first and second lumbar vertebrae. Note callus at site of fracture.

winter. Carcinoma generally is secondary to a primary focus in the uterus, breast, or prostate. Occurrence of pain in the back with a kyphosis following the removal of a breast for carcinoma should put one on the right track

towards making a diagnosis. Uterine carcinoma may be overlooked, however, and should not be forgotten in searching for a cause. Backache in men may be secondary to prostatic removal, and even if microscopic examination fails to show malignancy, it may exist and cause metastasis in the spine with fatal results. All men with persistent backaches beyond middle age should have an adequate examination of the prostate. It has been my fate to lose two cases in two years from carcinoma of the spine following removal of apparently normal prostates.

### Back Strain and Sprain

We will now go back to the question of back injuries as the result of industrial accidents. This class is represented by those patients who have injured their backs by strains from lifting, generally acquired by trying to carry or lift some object much too heavy for them. Many in this category have sudden pain in the back when trying to lift heavy objects. They feel, as they report, something snap or give way in their backs, and are usually able to localize the sore spot very accurately. Generally the pain is in the lumbar region. There may be pain and localized tenderness over the low spinal muscles, usually one-sided, and at times the soreness extends around into the flanks.

It is difficult, at first, to differentiate between muscular and ligamentous tears. I believe, however, that ligamentous tears are of longer duration, and that the soreness and tenderness are deeper seated. Ligamentous tears may be located in the region of the sacro-iliac joints and so may confuse the diagnosis. They do not get well as quickly, and heavy work in the future is apt to produce a recurrence of the soreness and lameness at the same spot.

The term back strain is used advisedly, for any definite classification of these cases is difficult. Many of these cases apparently receive muscle or ligamentous tears involving the fibers of the erector spinae group of muscles, the deep spinal ligaments, or the ligaments which are inserted about the sacrum or sacro-iliac joints. Very few show the typical signs of a true sacro-iliac strain, although it does exist in some cases. As a rule, definite back support is needed for a while.

The mechanics of a crush fracture is generally that of forced flexion of the spine, and the lesion is most commonly located at or about the dorsolumbar junction. The comparative frequency of this type of fracture following injuries to the spine has, in our opinion, been long overlooked, and many cases which have in the past been called "traumatic spines," or "railroad spines," I believe, have been crushed fractures of one or more vertebrae.

A compression fracture of a vertebra is one where the body of the vertebra is crushed or flattened evenly, or more on one side than the other, the injury appearing more often in its anterior portion than the posterior, depending, of course, on the direction of the application of the crushing force. They generally follow severe violence applied through the long axis of the spine, or while the



Fig. 6. The impact from a fall of seventy feet in this case caused the fracture of the second and third lumbar vertebrae.

spine is forcibly flexed. Falls on the buttocks, shoulder, or back, or landing from a height on the feet, combined with forcible flexion of the spine, are most frequent causes. Heavy objects falling on the patient's back, or being struck in the back by a sharp or heavy object, or being run over and crushed by a wagon, are also adequate causes.

Contusions of the back usually follow a fall or a blow on the back and the resultant injury is usually to the soft parts, although deeper bony structures may be injured. Apart from the bone injuries, however, the prognosis is good, the injury being seldom severe or of long duration.

#### Fractures of Vertebral Bodies

The level of the first lumbar vertebra is the most common site of this type of injury, probably because of the fact that this is the area of greatest mobility of the spine, and the least guarded by bony protection. The fractures are not limited to one body alone but involve others as well as the first lumbar.

Certain injuries result in a deformity of the back, a kyphos, a backward bowing, or knuckle, as a result of the bony destruction or collapse of the vertebral body. This knuckle or kyphos is not a constant factor, but may result from the fracture of one or more bodies. It is an important diagnostic point to bear in mind, and means only one thing, namely, destruction or distortion of the vertebral body. The kyphos may not make its appearance at once following the injury, but may appear and increase somewhat during the convalescence, especially in the interval when the individual is up and about without proper back support.

The interesting thing about these fracture cases and probably the reason why so many of them are not diagnosed at first is that complaint is made only of a stiff and painful back, with generally some tenderness over the site of the fracture. Very few of the patients have any of the symptoms due to nerve pressure, manifested as loss

freely, and are more limited in side bending than in forward bending. Their disability at first is generally complete, but as time goes on they are able to be up and about but not able to do heavy work.

In regard to the graver symptoms accompanying these

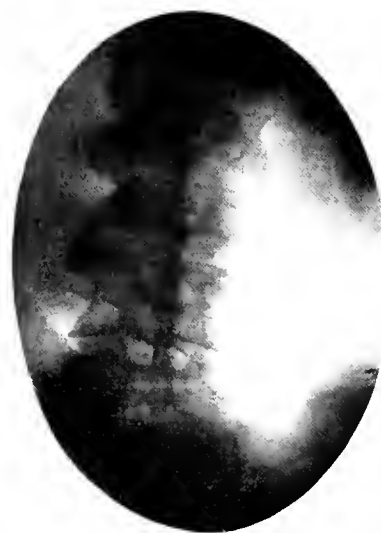


Fig. 8. Same case as that shown in Figure 7. The fracture of the first lumbar vertebra was complicated with a pre-existent hypertrophic arthritis. This condition was exhibited three years after the accident.

fractures, certain of the cases show definite signs of cord injury, manifested by loss of sensation in one or both legs, not complete, and more or less paralysis either early or late. Some of the cases which showed early loss of muscular power recovered it wholly, while others have suffered permanent damage to the cord from pressure of the injured vertebra.

The treatment in all these cases should be early and adequate fixation of the spine, in a plaster jacket at first, and later by a back brace. The whole period of treatment may probably cover several years. The question of operation on the spine designed to furnish support to the crushed vertebrae has been considered and has been done in some cases with the view of cutting down the period of convalescence and disability.

The conditions causing these injuries are clear, a fall from varying heights and landing on the back, the injury due to direct violence. Now, direct violence may produce many results, such as fracture of the vertebral bodies, or fracture of a transverse body, laminae, a spinous process, rupture of anterior or posterior spinal ligaments, as well as even rupture of the ligamentous nucha or intraspinal ligament. Contusions involving both deep and superficial muscles and ligaments are common and injuries to the tendinous insertions of the spinal muscles and ligaments in the region of the sacrum are frequent. Over-extension or forced hyperextension of the spine may produce injury to the anterior spinal ligaments; while forced flexion may produce not only a compression fracture but ligamentous rupture as well.

The predilection of the sacro-iliac ligaments to become injured is well-known, and generally misinterpreted. The necessity for clearly localizing the anatomical forces of the distribution of pain and other signs and symptoms is obvious, and an analysis of the method of production is essential to a correct interpretation of the condition, without which one may go far astray. An x-ray is always an essential, even purely on a negative basis.

Many of these cases suffer from sciatica as a result of



Fig. 7. In this fracture injury there is exhibited a hypertrophic arthritis which was pre-existent to the accident. Its existence in such cases may lead to confusion of diagnosis. (See Fig. 8.)

of sensation, paralysis of the legs, or incontinence of the bladder and rectum. This lack of nerve involvement in probably due to the fact that the spinal cord ends at about the level of the first lumbar vertebra, the point of greatest frequency of fracture, and so escapes injury.

In practically all cases of this injury the complaint is of a stiff, lame, and painful back. They cannot bend

their injury, clearly secondary but due to the accident. Sciatica may follow direct injury, or falls on the hips, back, or buttocks, as well as ligamentous and muscle strain due to lifting. It is due probably to compression of the nerve trunk somewhere along its course or to pressure on the nerve ends at its origin. In a certain number of cases, definite areas of anesthesia are manifest along the distribution of the external cutaneous and muscular cutaneous nerves.

Another common condition complicating these back injuries is hypertrophic arthritis, generally quiescent and

pre-existent to the injury. The accident usually lights the condition up and so aggravates it. Without this complication the disability period might be short; with it, the period is indefinitely lengthened and may be controlled only by careful and skillful treatment. The presence of hypertrophic arthritis in a spine which presents a crush fracture of one or more vertebral bodies may lead to confusion in that the vertebral bodies may be so altered by the arthritic disease as to resemble a fracture, and one cannot be too constantly on his guard in the interpretation of such x-ray plates.

## CHRONIC CARBON MONOXID POISONING—ITS IMMEDIATE AND SUBSEQUENT MANIFESTATIONS

BY GEORGINE LUDEN, M.D., PH.D., FIRST ASSISTANT IN PATHOLOGICAL RESEARCH, MAYO CLINIC, ROCHESTER, MINN.

FEW physicians have the opportunity of studying the effects of chronic carbon monoxid poisoning on themselves and of making uninterrupted observations during twelve months on three friends similarly affected. It has been my good fortune to gather subjective and objective data in this way. Sensations recorded by one's own tissues furnish a clinical picture of singular vividness. My experience, therefore, proved as instructive as it was unpleasant.

McGurn gives a graphic account of the symptoms which may be produced by prolonged inhalation of small amounts of carbon monoxid (CO); McCombs has published observations made on one thousand cases of acute gas poisoning. These two articles only came to my knowledge three weeks after positive Katyama tests, specific for carbon monoxid (Matthews) had furnished conclusive evidence of the presence of "coal gas" in my house. The symptoms described by McGurn and McCombs were found to coincide with those which I had observed in myself and of which I had kept a written record because I was unable to explain their cause.

### Signs Often Misinterpreted

Chronic carbon monoxid poisoning will, without doubt, shortly be recognized as an important feature of modern life. At present the toxicity, imperceptibility, and ubiquity of the treacherous gas fail to be sufficiently appreciated by the majority of physicians and by the general public. Its properties have been studied chiefly in connection with scientific research (Haldane, Henderson), industrial problems (Teague) and the construction of public means of transportation (Henderson and Haggard).

The manifestations of chronic carbon monoxid poisoning are overlooked or misinterpreted in nine cases out of ten, because they appear to be the result of any number of other factors. The reason for this is twofold: the sources of CO production escape notice because of their apparent insignificance; the symptoms produced can be numerous and diverse, and they are apt to be attributed to other causes. The layman ascribes the effect of minor degrees of poisoning to overexertion, the weather, a mere cold, or "rheumatism"; the physician is likely to suspect even the more severe symptoms of being the result of "a touch of influenza," dietary indiscretions, neurasthenia, or hysteria. The diversity of the symptoms produced in chronic carbon monoxid poisoning may be explained by (1) the amount of gas inhaled, (2) the duration of exposure, and

(3) the relative efficiency of the endocrine glands of the victim in a given case.

### Toxicity of Carbon Monoxid

Carbon monoxid kills in a dilution of 1:2,000 (Albaugh); it produced severe clinical symptoms on prolonged inhalation in a dilution of 1:250,000 (McGurn). Dilutions expressed in figures only convey little meaning. It is worth remembering, therefore, that in order to obtain a dilution of 1:2,000 a small glass of whisky (10 cc.) must be mixed with the content of the familiar five gallon gasoline can; and that the higher dilution—1:250,000—represents the content of the same small glass diluted with 625 gallons, that is, the content of the standard city sprinkling cart (Fig. 1). Yandell Henderson and his collaborators tested the effects of a dilution of 4:10,000 on themselves; no immediate symptoms were produced by this concentration, which represents one hundred of the small glasses diluted with the content of the city sprinkling cart. They question the accuracy of McGurn's estimate of a dilution of 1:250,000.\* Their experiments, however, constitute an example of scientific heroism in view of the treacherous properties of carbon monoxid and the possible after-effects of its inhalation.

### Imperceptibility of the Gas

It is a common error to assume that "coal gas" cannot be present unless it is perceptible by the sense of smell. No conception could be fraught with more danger. Carbon monoxid is as odorless as well as a colorless gas and slightly heavier than air; its presence would never be detected were it not for the addition of other compounds with which it is usually associated. McGurn states emphatically that "*grave danger* always exists when coal or illuminating gas is inhaled in quantities sufficient to be detected by the normal sense of smell." During the entire period of the nine weeks in which severe symptoms were produced by the inhalation of carbon monoxid in my house not the faintest trace of "furnace smell" was observed by any one.

### Ubiquitous in Modern Life

Carbon monoxid is produced in varying amounts wherever the usual varieties of fuel—coal, wood, petroleum, or gasoline—are subjected to incomplete combustion. It is universally conceded that only from 25 to 40 per cent, or at the most 60 per cent, of the energy stored in fuel is transformed into another form of energy by combus-

\*Personal communication.

tion engines, including furnaces; the remainder is converted into by-products. All fuel contains the carbon atom, which, in the presence of an oxygen deficit, may lead to the production of the deadly compound, carbon monoxid.

Wood, which is generally believed to be incapable of becoming a source of coal gas, is eminently capable of producing it. "Illuminating gas made from wood may contain as much as 60 per cent of carbon monoxid" (Da Costa:Mohler).

Chimney smoke is usually looked upon merely as an economic waste and a public nuisance. McGurn was able to prove in Cases 10 and 13 that soft coal smoke from a nearby chimney, which blew into an apartment for a few hours daily during a couple of months, caused very severe symptoms of chronic coal gas poisoning. The details given by McGurn are most instructive and should be read by every physician. Acute carbon monoxid poisoning by chimney smoke in seventy-three of 125 workers in a men's clothes manufacturing establishment has been reported by Harris.

Natural gas is responsible for many deaths yearly. It contains 90 per cent methane ( $\text{CH}_4$ )—that is the so-called marsh-gas or sewer-gas—and a mixture of other gases in varying proportions. Mellor attributes its harmful properties to "dilution of the oxygen." Its action, therefore, somewhat resembles that of carbon monoxid, which reduces the transportation of oxygen in the body. Inhalation of both gases results in an oxygen deficit for the organism. Natural gas is used extensively in Indiana, Pennsylvania, Ohio, West Virginia, New York, and California; to a considerable extent in Kansas and Kentucky; and to a lesser extent in Utah, Colorado, Illinois, Missouri, and Texas. In two nonfatal cases which came under my observation the after-symptoms closely resembled those of chronic carbon monoxid poisoning. The patients had never



Fig. 1. E. Dilution 1:2,000 in which carbon monoxid kills (Albaugh). Dilution 1:1,250,000 in which carbon monoxid does serious harm (McGurn).

Illuminating gas made from coal contains from 5 to 10 per cent carbon monoxid; water gas, "so largely made for illuminating and cooking purposes, contains approximately 30 per cent" (DaCosta:Mohler). Henderson has recently pointed out that 20 per cent of the toxicity of illuminating gas is caused by other compounds as poisonous as carbon monoxid. Death occurs after the blood is charged with 85 per cent of pure carbon monoxid made from formic acid; but a saturation of the blood with only 65 per cent of illuminating gas proves unavoidably fatal. The United States Bureau of Mines has shown very recently that three out of five types of gas tubing in common use are dangerous and unreliable, while two out of four varieties of gas tubing connections are equally unsatisfactory, leaks being frequent (Winters). Gas is used daily for a thousand purposes in our homes, laboratories,

and factories. Few people attach any significance to the "faint smell of gas," which is associated with practically all gas appliances; yet this faint odor heralds the minute traces which are probably the most common cause of chronic carbon monoxid poisoning.

### Sources of Carbon Monoxid Poisoning

Apart from defective gas fittings, tiny rifts in furnace pots, and the prolonged inhalation of small amounts of auto-exhaust gas, consideration must be given to two sources of carbon monoxid production of which the danger is not real-

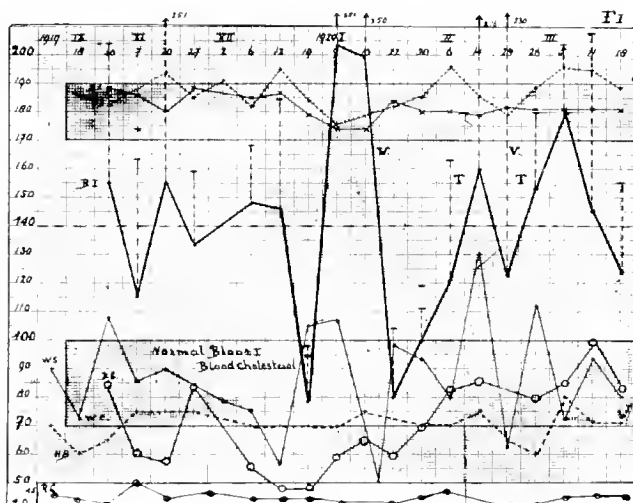


Fig. 2. (FI). Chart of blood constituents of F. F. G. from September 18, 1919, to March 18, 1920.\*

ized by the average householder, namely, the iron "breaching" connecting furnace and flue and the ordinary lime-mortar used in the old houses to make the flues air-tight. The iron breaching is corroded by the combustion fumes and becomes porous like old India-rubber. Ordinary lime-mortar is also disintegrated by heat and combustion fumes; its use has been condemned by the Building Code of the National Board of Fire Underwriters (1915), on account of "fire-hazard," but it may be found in many old houses. It is obvious that fire hazard implies the escape of fumes. Both factors probably played a part, albeit a minor one, in my experiences with carbon monoxid. My brick house was built about forty years ago and, in common with most people, I was entirely unaware of the danger of a porous iron breaching.

The cause of carbon monoxid production in my house is worth considering because it may easily be duplicated in many American homes. Two furnaces, both situated in the basement, were connected with the same flue. The larger furnace—hot water system—controlled the central heating; the smaller one furnished the hot water supply. During the damp, chilly days of September, 1919, the big furnace was fired in the daytime only with old wood of which we wanted to dispose; the small furnace, heated with coal, burned night and day. All flues cooled off at night. The additional loss of heat caused by the "going out" of the big furnace failed to be compensated by the warmth of the small furnace. A down draught, produced by the cold heavier air at the top of the flue, forced the

\*Key to Figures 2, 3, 4, 5 and 6: Reading from top of chart to bottom. B.C. Blood catalase; L.D. Lymphoid defence, percentage of small and large lymphocytes; B.I. Bloor I cholesterol (heavy line). The vertical dotted line represents the amount in milligrams of "split" cholesterol. B.S. Blood sugar (Benedict method); H.B. Hemoglobin percentage; W.C. White count (total leukocytes); R.C. Red count (erythrocytes). The figures on the left margin indicate the value of all the blood constituents; for example: 100 would mean 100 mg. Bloor I cholesterol per 100 cc. of whole blood; 100 mg. or 0.1 blood sugar; 100 per cent hemoglobin, but 10,000 leukocytes.

combustion gases into the house. Similar conditions obtain when fires are lighted for the first time in autumn and the flues are cold; they may be produced in any single flue intended to carry off the smoke furnished by two fires

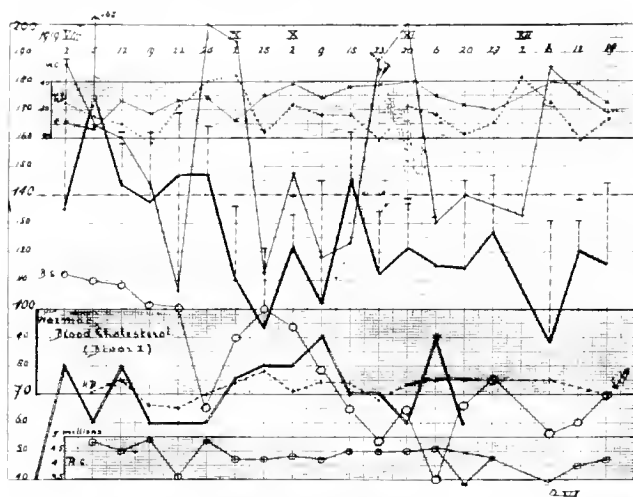


Fig. 3. (AVI). Chart of blood constituents of G. L. from August 2, 1919, to December 19, 1919.\*\*

of unequal intensity, for the less warm column of air above the smaller fire fails to warm parts of the flue sufficiently and a down draught results. This is not realized by the majority of people and is sometimes overlooked even by architects and engineers.

### First Manifestations Deceptive

The symptoms produced by carbon monoxid in my home must be described in detail because they were completely misinterpreted and attributed by myself and several other physicians to factors in no way responsible, but which we had a right to suspect to be the cause of these symptoms, because there was nothing to suggest the presence of a toxic gas.

An unmarried woman, aged thirty-three, living at my house had apparently recovered from a moderately severe attack of influenza. In previous years she had undergone several operations, including a Kelly's fixation of the left kidney. She is tall and delicate and the type of those whose enthusiasm and energy are apt to overtax their strength. She had been very active arranging the decorations for the wedding of a friend which had taken place at my house. Two days later (Saturday) she was seized with attacks of intense abdominal pain accompanied by visible spasms of the lumbar and abdominal muscles. Overexertion resulting in displacement of the kidney naturally suggested itself as the cause of the symptoms; the attacks resembled Dietl's crises. She was kept under opiates during the following day, the Clinic being closed. A cystoscopic examination, roentgenogram, pyelogram, and functional test, on Monday morning, failed to reveal any abnormality. The patient did not appear to be unusually exhausted after the examination. She was taken back to my house and rested comfortably on Tuesday. At eleven o'clock Wednesday evening she suddenly developed alarming symptoms of collapse: the pulse disappeared, breathing stopped, to be resumed with difficulty on admonition. Her face became haggard, the eyes assumed the "broken" look which usually heralds death (facies Hippocrates). The sudden onset of the symptoms seemed inexplicable. I succeeded in making her swallow some brandy and black coffee (strychnin injections appeared contra-indicated because of the previous muscle spasms) and summoned a senior colleague. When he arrived, ten minutes later, pulse and respiration had improved considerably, but the patient was suffering from a severe shivering attack without demonstrable cause: the temperature had been normal

all day. The patient called our attention to the peculiar behavior of her hands; they were rigid, the fingers were fully extended, but they relaxed in a few minutes. A reaction then set in, and notwithstanding the patient's manifest efforts at self-control, tears began to roll down her face. My colleague pronounced the syndrome "the best case of shock he had ever seen," but was no more able than I had been to account for the occurrence of "shock" more than sixty hours after a cystoscopic examination and following twenty-four hours of comparative well being.

After the reaction the patient's condition was satisfactory, but during the remainder of the night she had several other less severe attacks of syncope. She had chaffingly accused me of over-anxiety at first, but towards morning she admitted dreading these attacks; she feared that she might not have enough strength to go on breathing, it required such an effort. In view of her previous cheerful attitude this admission gave cause for apprehension. It occurred to me to try injections of camphorated oil. During my studies in Europe I had been taught to look upon camphor as a stimulant of the respiratory centrum and these mysterious attacks of syncope seemed to be somehow associated with inhibition of respiration. Hypodermics of 0.1 gm. of camphor in sterile oil gave immediate relief, but their effect lasted for only about two hours. The possibility of an occult adrenal or intraperitoneal hemorrhage suggested itself, in which case camphor would be contra-indicated. Hemolytic Streptococci had been isolated in many cases of influenza in which adrenal hemorrhages had been found at necropsy. The patient had had influenza and the severest pains were located in the lumbar region. At my request an eminent surgeon examined the patient, who at this time did not present the picture of severe illness as the camphor stimulation was still effective. He decided that internal hemorrhages might safely be excluded; the symptoms appeared to him to be nothing but a severe nervous reaction.

During the following weeks—September 15 to October 25—the patient's condition showed little change. Intense abdominal pains, visible spasms of lumbar and abdominal muscles, sudden attacks of syncope, and chills without rise of temperature, alternated with periods of comparative well being. The attacks came for no demonstrable reason, generally without warning, but, further confusing the problem, mostly between seven and nine in the evening. Minor symptoms developed: headaches located behind the eyes, but the patient had suffered from headaches for years; occasional, if rare attacks of nausea; obstinate constipation; irritation of the bladder with difficulties in micturition; the bladder symptoms were ascribed to the elimination of the camphor, but were also observed when no camphor had been given. The temperature was normal or subnormal with an occasional evening rise; this, too, had frequently been observed in previous years. The heart sounds were normal. The pulse was of a good quality, on the whole regular, 68 to 72 beats to the minute. At intervals, however, the pulse showed irregularities of a puzzling character: series of good strong beats alternated with series of small, "flat" beats that were scarcely perceptible, but without acceleration. The electro-cardiograph failed to reveal these abnormalities, although they could be felt at the wrist. Urinalysis and blood counts showed nothing abnormal; the erythrocytes were 4,500,000 to 5,000,000, which seemed high considering the general debility of the patient; the hemoglobin was 70 to 75 per cent; the leukocytes 6,000 to 10,000. The blood pressure was low: systolic 70 to 80, diastolic 60 to 70; the pulse pressure often did not exceed 10 mm., observations being made daily at the same hour and frequently repeated at different times of the day with the Tyco's sphygmomanometer. The blood sugar was very low, 0.05 to 0.06 gm. per 100 cc. of blood; the blood cholesterol values were high on the whole, 130 to 155 mg. per 100 cc. of whole blood (Fig. 2).

Tuberculosis of the parietal peritoneum (Quervain) was suspected, but the absence of tympanitis made the diagnosis doubtful. The patient was cheerful, even inclined to be over-active when she was free from the more severe symptoms, but slight exertion produced marked exhaustion. She was kept in bed on account of this great fatigability.

The total lack of demonstrable findings seemed to jus-

\*\*G.L.'s and H.H.G.'s blood sugar dropped to 0.04 mg. October 20. Both persons had been in the carbon-monoxid laden cellar repeatedly between October 25 and 30.



tify the diagnosis "neurasthenia," although I could not endorse this diagnosis; it has always seemed to me a mere admission of ignorance concerning the cause of symptoms, which, in nine cases out of ten, adds mental suffering to the physical distress of the patient. There was, moreover, in the entire syndrome a vague, intangible element of danger for which I could not account, but of which, as I watched the patient day and night, I could not help being acutely conscious, although others who only saw her at intervals for a short time were naturally skeptical.

During this entire period of five weeks my own physical condition began to alarm my friends. I looked and felt wretched. However, lack of sleep (the attacks of syncope often came during the night), anxiety about my patient—an only child entrusted to me by her mother whom circumstances prevented from coming—and this undefined consciousness of danger which kept me on the alert every minute, seemed more than sufficient to explain my weariness. In addition I was trying to write a thesis against a given time. All my subjective symptoms, facial neuralgia (which had troubled me since I had recurrent fever many years ago), vague aches and pains, breathlessness, and an occasional attack of nausea, were therefore attributed to mere fatigue (Fig. 3).

### Symptoms Still Unexplained

I kept a record of these symptoms for future reference in connection with serial observations on my blood cholesterol, which I had been making for five years, but otherwise I paid little attention to them. One peculiar occurrence must be mentioned: I repeatedly awoke suddenly on account of the inexplicable and uncomfortable behavior of my heart: it seemed to be turning somersaults. Whenever this happened I concluded that my patient had called me (her room was next to mine), for I invariably found her fighting for breath, on the verge of syncope. We jokingly decided that she must send a mental *S. O. S.* when breathing became difficult. Her throat had often felt sore, "raw" during these weeks. October 25 she developed slight symptoms of laryngitis and bronchitis; steam and benzoin compound were used to relieve these symptoms. That evening she complained for the first time about giddiness when sitting up in bed; she was very pale and her pupils were dilated. I was sitting on the edge of her bed when she remarked that I had suddenly "changed color" very markedly. I had to admit that I, too, felt giddy. She then suggested that the bezoin fumes, by accumulating in the corner where her bed stood, might be responsible and, in order to test this theory, I went into the middle of the room. Here I noticed that my giddiness increased instead of decreased, which made me suspect for the first time the presence of carbon monoxid, because the heavy gas does not rise unless wafted upwards by some current of warm air, and columns of gas-laden and pure air will, consequently, be found side by side in the same room. The most probable explanation appeared to be a "burst of gas," such as is often produced by a small explosion of the coal in furnaces. I went into the cellar to investigate. There was no odor of furnace gas. The large furnace supplying the hot water heating system was out; the small furnace taking care of our hot water supply seemed to burn half-heartedly. I opened all the dampers and, as a precaution, all the windows in the house. As a matter of precaution also I gave the patient and her nurse a big cup of black coffee and took coffee my-

be overheated. This time the air in the cellar was difficult to breathe, but there was no odor. I broke a window pane and opened the outer cellar door to create a draught. When I began to ascend the second flight of stairs I no-

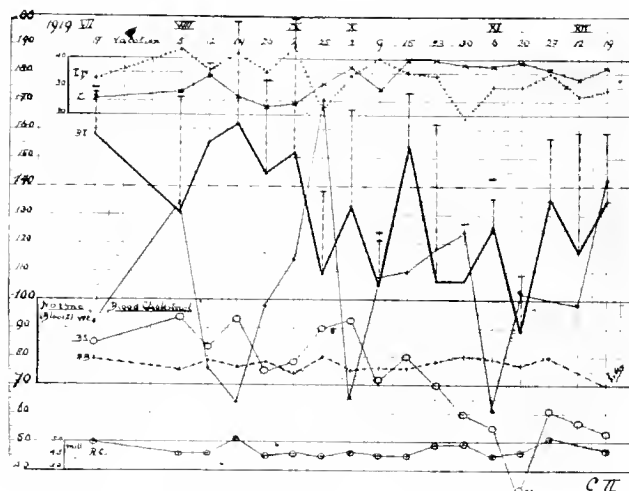


Fig. 4. (CH). Chart of blood constituents of Mrs. H. H. C. from 17, 1919, to January 9, 1920.\*\*

self. Three-quarters of an hour later I went to the cellar again to close the dampers lest the hot water pipes should ticed that I was swaying; my legs felt as if they did not belong to me. I lurched into the patient's room and my pulse was observed to show the peculiar irregular "flatting" and my face the greenish pallor with vivid red spots on the cheek bones and dark red lower lip which I had noticed and been unable to explain in my patient. My pupils were widely dilated; my chest felt as if it were made of concrete; my heart seemed to be beating with an effort of which I was conscious; in other words, short of syncope, I was duplicating the syndrome which had baffled interpretation. A camphor injection speedily removed the feeling of weight in my chest and I was seized with an attack of shivering which no exertion of will power could control. The fact was now recalled that friends, husband and wife, who had dined with me that evening had shown symptoms belonging to carbon monoxid poisoning—he had been overcome with drowsiness while I read a story to them, and the wife had complained of a bad headache. Both had ascribed their lassitude to fatigue and suggested that they might be getting influenza, the disease being prevalent at the time. I also remembered noticing that my patient's nurse did not seem well that evening, her cheeks being a very vivid red. These two facts showed that there must have been carbon monoxid in the house several hours before I had inhaled a large amount of it in the cellar. This was connected with the fact that the attacks of shivering which usually developed in my patient between seven and nine p. m. might bear a relation to the "going out" of the big furnace at that time, when the resulting down draught was likely to force a greater amount of gas into the house. Consequently the big furnace was kept burning night and day. This precaution, however, did not eliminate the production of gas, and thorough cleaning of furnaces and flue proved no more efficacious. Between October 25 and 30 my patient and I had several attacks of dyspnea and shivering. Although there was now no doubt as to the cause of these symptoms, others still denied that these symptoms were produced by carbon monoxid, until Katayama tests made on the blood of the patient, the nurse (who, not having been exposed as long did not show any severe symptoms) and

\*A little girl cousin of mine, who died at the age of nineteen from typical Addisonia, although bronzing remained confined to circumscribed areas, suffered acutely for five years through this diagnosis, and the stigma of "faking" which it represents to the lay mind. She was the pluckiest, most unselfish, and most cheerful patient I have met.

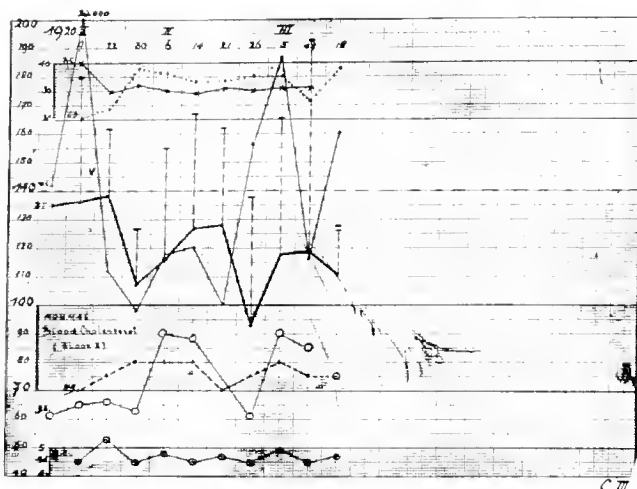


Fig. 5. (CIII). Chart of blood constituents of Mrs. H. H. C. from January 1, 1920, to March 18, 1920.

on my own blood furnished conclusive evidence (Figs. 2 and 3).

### Hypersensitization Produced

After the presence of carbon monoxid in my house had been demonstrated beyond doubt by the specific chemical test the source of its production could not be eliminated at once. The house was vacated for ten days, submitted to a thorough cleaning, and all the repairs which might prevent carbon monoxid production made to the furnaces. Nevertheless manifestations of the inhalation of carbon monoxid continued to occur during the following six weeks. The symptoms varied in intensity because of the variable amounts of gas produced as the result of atmospheric changes, the rate of burning of the furnaces, and so forth. During these six weeks, October 25, 1919, to January 15, 1920, I had an unusual opportunity to become thoroughly acquainted with many manifestations of the inhalation of traces of carbon monoxid, and with various peculiarities of the gas that have not been generally recognized; namely, the adherence of the heavy gas to objects such as garments and furniture, and the hypersensitization which it produces. As we lived in a constant draught during these weeks, the concentration of carbon monoxid in the house must have been very small. Unfortunately this concentration could not be determined as the report of Teague's new method and portable cabinet for the determination of carbon monoxid had not been published at

the time. January 15, 1920, a connection was established between the house and the garage by means of which central heating and hot water were furnished, all heating appliances being eliminated from the house.

A synopsis of the symptoms of chronic carbon monoxid poisoning which I observed and checked by subsequent observations is given in the descriptive terms in which they were written down before the source of carbon monoxid production had been discovered, in the hope that in this form they may be of assistance to the practitioner and lead to the identification of unsuspected cases of chronic carbon monoxid poisoning.

(To be continued)

### DR. STONE HEADS BUREAU OF HOSPITALS

Announcement is made of the appointment of Dr. Lee Alexander Stone, regional consultant, United States Public Health Service, to the position of Chief of Bureau of Hospitals, Social and Industrial Hygiene, of the Chicago Department of Health. To the routine duties of looking

after the hospital situation in the city of Chicago as regards licensing, inspection, etc., there will be added the entire charge of all the social hygiene activities in Chicago, including the supervision of venereal disease clinics now being operated by the city of Chicago with the assistance of the United States Public Health Service. Considerable emphasis will be placed during his incumbency upon educational work and a detailed study on industrial hygiene much stress will be placed work in social hygiene.



Lee Alexander Stone, M.D.

will be made of industrial conditions in the city of Chicago looking toward a plan of coordination with the industrial physicians in the city.

Dr. Stone formerly occupied the chair of Medical Sociology in the University of Tennessee College of Medicine, Memphis, Tenn., and has been connected with the Army since 1893.

### THE FUNCTION OF SOCIAL MEDICINE

"Social medicine is a science which designs to coordinate and popularize the scientific and practical results of the several biological and social doctrines, shaping the customs and laws of peoples and governments, with the object of effectively protecting the physical, moral, and economic life of nations, by diminishing disease and mortality, by prolonging the average period of life of the poorer classes, and by the betterment of the race. By studying the physiological needs of the individual in relation to social conditions, the sick man in relation to the community, and diseases in relation to the economic and moral environment, social medicine aims at the suppression and prevention of diseases common to social groups, by discovering and eliminating the social factors which underlie and favor such diseases, and by the application of suitable social remedies acceptable to the people by virtue of their hygienic conscience, and put into force by the civil government through legislation."—Guiseppe Tropeano.

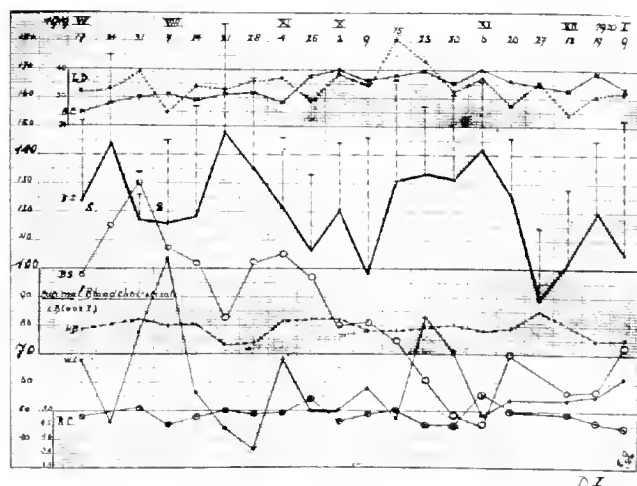


Fig. 6. (DI). Chart of blood constituents of Mr. H. H. C. from July 17, 1919, to January 1, 1920.

# THE NATION'S HEALTH

## Public Health and Public Welfare, Administrative Medicine, Organized Health Service

C. E. A. WINSLOW, DR. P. H., *Editor*

### THE WAR AGAINST THE RAT

THE "serious, even though not alarming bubonic plague situation in the Southern States,"—to quote from resolutions of the Conference of State and Territorial Health Officers held at Galveston last summer,—has led to an active interest in the anti-rat campaign in seaboard states as far north as Massachusetts. India has been the primary focus of plague for the last twenty years; but secondary foci exist in the Dutch East Indies, Indo-China, Egypt, Senegal, and certain South American countries. Serious outbreaks at various Mediterranean ports, and at Vera Cruz, in 1920 brought the menace clearly home to western Europe and the United States, respectively.

The rat richly deserves attention on its own account and not merely as the principal reservoir of the germ of plague. Creel<sup>1</sup> estimates that in the ordinary American or European city the rat population is just about equal to the human population, while in rural districts our rodent cousins greatly outnumber us. The upkeep of the rat is estimated to cost at least a half a cent a day in the United States and in Great Britain; so that we may conservatively conclude that as a nation we are paying a tribute of two dollars per person per year for the maintenance of these highly undesirable aliens in our midst.

It is the possibility of plague infection, however, that makes the situation so immediately critical at the present moment; and the first duty urged upon the health authorities of seaboard towns is the determination of the presence or absence of plague infection in the existing rodent population. By means of a carefully conducted rat survey it is possible to know with a fair degree of certainty whether or not rodent plague has been introduced. It is reasonable to believe that plague always exists among rats for some time before the infection is transmitted to human beings. The Public Health Service has recently published a very valuable discussion of this problem<sup>2</sup> in which it is suggested that a fair basis of judgment requires the examination of 100 rats per 1,000 human population. Trapping is the only method to be considered in obtaining specimens for laboratory examination, and the cost of capturing and examination is likely to average about one dollar per rat, or ten cents per person in the population, on the basis estimated above.

The most vigorous anti-rat measures should, of course, be immediately instituted in the neighborhoods where infected rodents, and still more where human cases, have been found. Campaigns along this line have been economically conducted in Manila and New Orleans,<sup>3</sup> and in Japan the rats have sometimes been first imprisoned in the infected area by sinking a barrier of corrugated iron into the ground surrounding it.

The efficacy of various traps and poisons has been admirably discussed in a recent contribution by Dewberry<sup>4</sup>; but sporadic attempts at the destruction of rodents by trapping and poisoning are of little value, except as applied to the rats in such specially infected areas as those described above. The real remedy is the rat-proofing of buildings and the enforcement of such measures of municipal cleanness as will radically limit the extramural sources of rodent food supply.

The recent bulletin of the United States Public Health Service to which reference has been made above<sup>5</sup> contains a statement of the necessity of rat proofing and an estimate of the economic gain from such measures and gives an admirable model rat-proofing ordinance which is essentially suitable to any urban community. It provides for the division of all buildings into two classes, Class A including restaurants, hotels, slaughter houses, bakeries, and all other places where foods are handled or stored on a large scale, while Class B includes ordinary dwelling and other buildings except stables (which are separately treated). Buildings of Class B must be rat-proofed by the laying of a three-inch concrete floor, hermetically sealed to six-inch walls of concrete or brick or stone, laid in mortar extending two feet downward and twelve inches upward from the floor. Stables are to be similarly treated, though the floor must be six inches thick and many other structural details are specified.

Buildings of Class B may be rat-proofed by raising them upon pillars or underpinnings eighteen inches above the ground or by constructing at the margin of the ground area of the building a six-inch sustaining wall of concrete, or brick or stone laid in mortar, extending two feet below the ground level and meeting the floor of the building closely. Other sections deal in careful detail with the handling of rubbish and the replacement of planking and plank walks, the construction of cellars and the like.

Such measures cannot exterminate the rat; but they should so reduce the number of the rodent population as to eliminate practical danger of the spread of bubonic plague and cut down to a negligible amount the economic loss due to rat depredations.

EDITOR.

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3. Balfour, M. C.: The Prevention of Plague and of the Economic Loss Caused by Rats, 1920, Internat. J. Pub. Health, 1920, i, p. 384.  
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# MAKING MICHIGAN FIRST IN HEALTH

BY R. M. OLIN, M.D., COMMISSIONER OF HEALTH, LANSING, MICH.

NO MAN, I believe, can be a good public health man and have anything of the pessimist in his make-up. He must be an optimist through and through if he is to succeed in public health work; and the more time one devotes to public health duties, the more must he cultivate and acquire the spirit of optimism and patience. The ideal public health worker should have the combined qualities which make a great detective, a beloved family physician, a scientist, a business administrator,—and something of the wit who said: "The surest road to happiness is paved with imagination, and the best means of locomotion is to kid yourself along."

Personally, I like frequently to recall the motto of Will Levington Comfort, one time Detroit elevator boy who by sheer force of will and perseverance rose to what he is today. Comfort lives by the following creed, a creed that many persons would do well to include in their daily life: "Like it all wonderfully well; getting the warm laugh on it all, and believing firmly that the best possible thing that can happen is the thing that happens next."

defined lines of work in every health department, but elastic in structure to conform to changing needs.

There may have been a time in the peaceful past when a state health executive could write an article on the functions and accomplishments of his department and look forward with a sense of satisfaction to reading that article several months hence and finding it still applicable; but that time, if it ever existed, has long since passed. In public health work today, as in our present industrial organizations, events are crowding fast, developments are unfolding too swiftly, to permit of any permanency of record. What we write today we revise tomorrow.

We are finding that true daily at the Michigan Department of Health. Where for years we had a State Board of Health with the secretary acting as executive officer, we now have a State Department of Health with a commissioner, a deputy commissioner and an Advisory Council of Health. Our last legislature brought about that reorganization. Keeping pace with this change, the entire work of the department has been systematized and correlated into bureaus, based, of course, upon the well

The skeleton outline of the Michigan Department of Health organization is simple. There is no complicated overhead wound with red tape to impede quick action. We realize that the very fact that we are a relatively small and compact organization is in our favor. You can get quick results with a unified group of eighty-five persons such as we have. If the growth of the next three years keeps pace with that of the last three, and every indication points that way, we will soon face the problem of getting the same quick action with a more complicated organization; but I believe that we have the basic structure that can carry indefinite expansion.

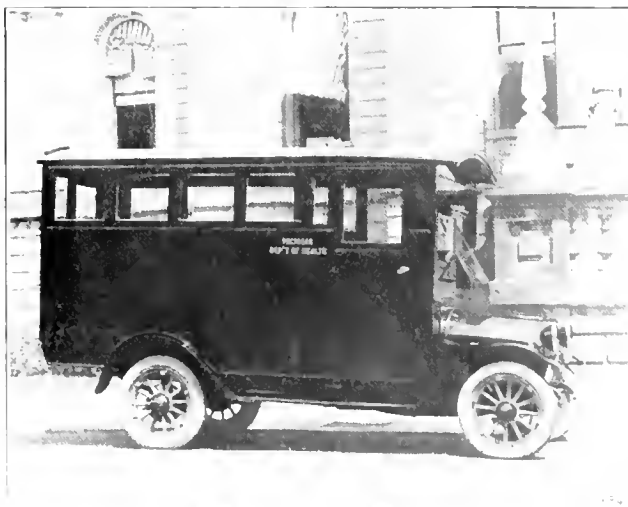
Our seven bureaus are mutually inclusive, never exclusive. There is, as always must be, the closest cooperation.

The Bureau of Sanitary Engineering, headed by Maj. E. D. Rich, is our senior bureau and it handles all problems of sanitation, water supplies, sewage disposal, garbage disposal, and the hundreds of requests from the municipalities for everything from expert consultation to assistance in cleaning the back yard. At present we are doing some special work in stream pollution. The fact that Michigan is surrounded by lakes and crossed by numerous rivers complicates rather than solves our sanitary problems. The thousands of nonresident fishing licenses issued yearly attest the popularity of Michigan waters. Michigan's summer resort industry, which attracts vacationists who spend \$100,000,000 each season, and the state's fisheries, with earnings based at \$25,000,000 yearly, will be destroyed unless adequate sanitary measures are taken to protect the fish life. Nearly all the industrial wastes, such as oil from automobile factories, milk washings from condensaries and dairies and beet sugar refuse, are detrimental to the fish, and the proper disposal of these wastes presents a difficult problem which we are trying to solve.

To the sanitarian, resorts too often spell vacation typhoid. They do in Michigan, and one of the most interesting developments in state health work is our attempt to meet the resort problem with a "laboratory on wheels," as the newspapers chose to call it. A completely equipped motor truck laboratory ready to test water samples, milk samples, and inspect waste disposal, was sent up the resort-dotted coast of the state.

This laboratory visited fifty-nine resorts in the seven weeks it was on the road, with the unanimous support of the hotel men and resort owners. So encouraging were the results obtained that an additional truck will be put in the field next season. It helps business while it safeguards health,—a working combination not to be scorned by any health department that wants results. The motorized laboratory was the combined effort of the Bureau of Engineering and the Bureau of Laboratories, with a close connection with the Bureau of Communicable Diseases. It was also a most effective exponent of the Bureau of Education because the truck visited the state university and the state normal college at the beginning of its trip, giving to the summer school students a practical demonstration of public health work. The task of the motorized laboratory is far from finished. With the closing of the resorts came the opening of the schools and the important question of pre-school and school inspections to detect disease carriers, and the truck is serving as the center of the "swabbing parties."

Michigan has a big problem to face in its diphtheria



Michigan's "Laboratory on Wheels" safeguards not only health, by aiding in the prevention of vacation typhoid, but protects the summer resort industry.

death rate, and active measures have been under way for several months for a concerted attack.

In one of our regular bulletins sent to all doctors and health officers in the state attention was called to the seriousness of the situation, and pre-school inspection for the detection of carriers was urged. The response was overwhelming. From the opening of the schools up to the first of November 35,000 swabs have been sent out by our laboratories to health officers and physicians to be used in taking cultures from the throats of school children. In addition to this, 10,000 cultures have been taken by the personnel of the department. The health officers, doctors, nurses, and school men of the state are offering splendid cooperation, and we have been obliged to put on a night shift in the laboratory to meet the emergency. One incident of the school work was the visit of the traveling laboratory and a corps of five technicians to St. Clair county, where the throats of 6,500 school children were swabbed and about fifty carriers detected. The chief value of swabbing, we grant, lies in the education it brings to the community. When we reach the point where we can Schick and actively immunize, the solution of the diphtheria problem will be attainable. But, though we have used the Schick test in several schools of the state, we have not yet reached the stage of general use and, in the meantime, the school that has been swabbed—twenty-seven localities have been visited in Michigan this fall—is the school that is alive to the fact that the throat is an important part of the anatomy.

### Schick Test State Wards

An interesting example of the working out of the Schick test is evidenced at our Michigan Home and Training School at Lapeer, where, under the supervision of Dr. C. C. Young, director of laboratories, 1,800 patients and employees were tested and 243 Schick positives were found. This eliminated 1,557 persons from prophylactic treatment in case of an outbreak of diphtheria and saved the institution \$7,000 per year formerly expended for anti-toxin.

The outstanding features at present in our Bureau of Communicable Diseases, under the direction of Dr. W. J. V. Deacon, are the traveling clinic and the work in school inspection.

When the Michigan Department of Health took over the tuberculosis clinic from the Michigan Anti-Tuberculosis Society it was a definitely specialized clinic. We have changed that. First, we added a children's specialist to reach the pre-tuberculous group of children, and we have succeeded in doubling the percentage of children usually examined in a tuberculosis clinic. We have now added a venereal disease clinic and in January we introduced a child welfare unit. We have, in addition to enlarging the clinic staff, changed the emphasis of our publicity, urging general physical examinations for everyone in the community, whether there is a definite suspicion of tuberculosis or not.

I believe in a broad, many sided attack upon any public health problem, and one of the most telling weapons is a traveling clinic. There is no better concrete service that a state department can offer the smaller communities, particularly, than to make available the expert medical service that gives our city children the advantage over their country brothers and sisters.

### Broaden Venereal Disease Work

The most rapid and spectacular growth in the whole department can probably be attributed to the Bureau of Venereal Diseases. A war measure first, it is now a



A motor truck is completely equipped as a laboratory ready to test water samples, milk samples, and to inspect waste disposal. (1) Cases for miscellaneous light articles. (2) Dome lights, two. (3) Copper water tank 20 gal. capacity. (4) Hose from water tank to sink. (5) Sink. Folds into space at right. (6) Sink hinges. (7) Sink outlet. Hose through floor to ground. (8) Pressure cooker used as autoclave. (9) Kerosene stove. (10) Oven for dry heat sterilizer. (11) Dishpan. (12) Wheel housing. (13) Removable door from sink cupboard. (14) Incubator, Eberbach, 12"x12"x14" inside dimensions. (15) Cleats for extra seat. Capacity of seats, four people. (16) Folding work bench. (17) Cupboard for sterilizer and other articles. (18-19-20) Stacks of drawers. (21) Folding microscope. (22) Microscope lamp. (23) Gasoline bunsen burner. (24) Rear door.

definite and indispensable part of our state health organization. Michigan has as stringent and effective a venereal disease control law as any state in the Union. The whole problem, from our viewpoint, is one of public health, and we have had the practically united support of the medical and nursing professions, the druggists, the social workers, and the people generally of the state. Michigan can boast of the largest legislative appropriation of any of the states—\$300,000 for two years. Dr. G. M. Byington directs the activities of this Bureau.

We have hospitalized more than 2,000 cases, men and women, and we are now treating over 1,800 cases a month in the ten clinics throughout the state. Naturally, with the increasing number of clinics, hospitalization is being cut down. In our hospital work we have not been content with merely giving medical treatment, but by a system of state supervision we have given social after-care to the discharged patients, just as the up to date hospital gives after-care—to insure the permanency of the medical treatment. The cooperation of the druggists of the state in reporting prescriptions filled has been one of the most encouraging features of our campaign. More than 88 per cent of the druggists are reporting monthly.

In Michigan all matters pertaining to embalming are by law brought under State Department of Health control. We have a special bureau that handles that phase of public health work, examining and licensing all embalmers and giving general supervision.

A good deal of interest centers around our Bureau of Education. I believe that public health education is as vitally important a line of work as any followed out in the State Department, and to get it done effectively and with any unity it must be centralized.

The old method of each bureau carrying education as a side line does not make for a coordinated state program. Consequently, we clear all our education and publicity activities through a bureau. Call it an ideal type of organization, if you like. It works in Michigan, and we are well aware that the reason it works is because of





# DIETARY HYGIENE AS TAUGHT BY MUSEUM METHODS

BY MARY GREIG, DEPARTMENT OF PUBLIC HEALTH, AMERICAN MUSEUM OF NATURAL HISTORY, NEW YORK CITY

THE general problem of malnutrition among school children is receiving the serious attention of the various departments of education in connection with the work of the school lunch service.

It has been felt in New York City that the provision of lunches for the children is not sufficient by itself to establish proper dietary habits. Only 9 per cent of the children take the lunches and, if a child eats the school lunch regularly, he obtains only 5 per cent of his yearly total of meals in this way. Because of this fact, as well as for other reasons, it has been realized that the school lunch to be effective must be supplemented by definite instruction in dietary hygiene in the classroom.

The normal child possesses a natural appetite for wholesome, simple foods which enables him to eat with relish dishes that seem insipid to the perverted tastes of many adults. The purpose of dietary education is to transform this rational appetite into habits of correct eating which will persist through adult life.

With this end in view, Dr. Gustave Straubenmüller, associate superintendent of schools of New York City, sent a request for teaching material on dietary hygiene to the American Museum of Natural History. To meet this demand we have prepared a traveling loan exhibit under the direction of Professor C.-E. A. Winslow, curator of the Department of Public Health of the Museum.

This exhibit consists of a set of sixteen wax models of foods suitable for a child between ten and thirteen years of age (Figs. I and II), a set of colored wooden blocks which illustrate the composition of six common foods, and eight wall charts.

These food models can be used in several different ways to teach the essential principles of dietary hygiene. They can be used to give the child the idea that a certain bulk or measure of food stands for a certain definite amount of energy, since each food model represents a 100-calorie portion of food, or in some cases a 50-, 150-, or 200-calorie portion. Again, the models can be used to show the foods which furnish the materials, such as calcium, iron, phosphorus, protein, and vitamins which are essential for upbuilding the body and regulating its life processes.

Finally, the models can be combined to form three daily meals, illustrating an ideal breakfast, dinner, and supper for children of the ages specified. For all these angles of teaching, supplementary data are furnished by the charts.

The preparation of models of foods like those used in this exhibit is possible only where one can draw upon the services of a corps of skilled model makers such as the American Museum employs. A temporary exhibit, teaching the essential lessons involved, could, however, easily be set up by any teacher or health worker by using the actual foods themselves. Full data in regard to quantities are given in the following paragraphs. The

block models illustrating the composition of foods could be prepared by any carpenter by cutting  $1\frac{1}{2} \times 1\frac{1}{2}$  pieces into appropriate lengths and painting them with a characteristic color for each component.

In the circular which accompanies the exhibit we point out that the body must get from its food:

A. *Energy*: for the performance of the internal and external work of the body.

B. *Special Materials*: for the growth and repair of body tissues and for the chemical regulation of the various functions of the body. The most important of these are: (1) proteins; (2) mineral salts; (3) vitamins; and (4) water.

The essential facts in regard to the energy requirements of the body are presented as follows:

## Food as Potential Energy

The body operates as a fuel-using machine. Such machines are supplied with energy in potential form as fuel. This fuel they oxidize, and thus release the energy in an active state for use. The human body, like the gasoline engine, is a machine of this kind. The fuel of the body is called food.

The body cannot make energy nor destroy energy. All the energy that it uses it must get from its food.

Some foods furnish only energy. Some foods, besides supplying energy, also supply materials for the growth and repair of the body.

The body uses the energy which it gets from food in two ways: (a) To perform internal work; that is, (1) to keep the heart beating; (2) to keep the chest muscles working; (3) to maintain the movements of the digestive canal; (4) to maintain the proper tone in the blood vessels; and (5) to maintain a constant body temperature, etc. (b) To perform external work in such actions as the following: sitting, standing, walking, typewriting, sewing, sweeping, carpentry, etc.

Heat energy is measured in calories. A calorie represents the amount of heat energy which will raise the temperature of a kilogram (liter) of water  $1^{\circ}$  C., or the temperature of a quart of water 1.8 degrees on the Fahrenheit scale.

## The Energy for Internal Work

The energy needed for internal work is always about the same because everyone has to maintain such life processes as respiration, circulation of the blood, digestion and absorption of food, and excretion. The amount of energy needed for these essential life processes is about seventy-five calories per hour, or 1,800 calories a day. This means that the food we eat must contain at least 1,800 calories daily to keep us alive (Fig. 3).

However, 1,800 calories would not be enough for ordinary life because in order to live on that amount of energy, we should have to lie still in bed.

## The Energy for External Work

The amount of energy that any one person uses varies during the day. If a man is sleeping, he uses from 60 to 70 calories of food energy per hour; if he sits up in a chair this is increased to 100 calories per hour; if he walks slowly, to 200 calories per hour; and, if he becomes energetic, his expenditure of energy goes up until in such severe forms of muscular work as sawing wood it goes up to 480; and in bicycle racing to 600 calories per hour.

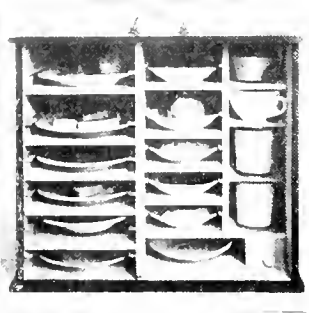


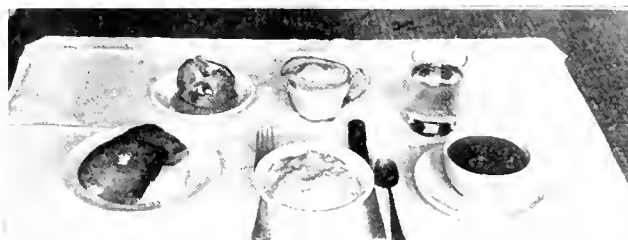
Fig. 1. The traveling loan exhibit, packed and ready to send out for public school use.

## ENERGY EXPENDITURE OF AVERAGE (154 LBS.) MAN UNDER DIFFERENT CONDITIONS OF ACTIVITY.

Occupation	Calories he would use per hour
Sleeping	60-70
Awake, lying still	70-85
Sitting	100
Standing	115
Tailoring	135
Typewriting rapidly	140
Shoemaking	180
Walking slowly (2 $\frac{2}{3}$ miles per hour)	200
Carpentry	240
Walking quickly (3 $\frac{3}{4}$ miles per hour)	300
Sawing wood	480
Running	500

From tables such as these the daily needs for different occupations are computed. These range all the way from about 2,000 calories for sedentary occupations such as bookbinding and sewing, up to from 5,000 to 6,000 for such active work as is done by excavators, lumbermen, etc.

## BREAKFAST



## DINNER



## SUPPER OR LUNCH



Fig. II. The models provided in the public school exhibits can be combined, illustrating an ideal breakfast, dinner, and supper for children of the ages specified. Supplementary data are furnished for teaching purposes.

The standard for the average man of 154 pounds weight doing fairly active muscular work is from 3,000 to 3,300 calories. The standard for the average woman of 136 pounds of the same degree of activity is about 2,500 calories.

The standard for children of different ages is given in Figure III.

A useful way to learn the energy value of foods is to picture the amounts of common foods that will fur-

nish 100 calories apiece. Such amounts are called 100-calorie portions.

Luckily, many 100-calorie portions of foods are very close to ordinary table servings:

Almonds.....12 to 15	Figs.....2
Apples*.....1 large	Kidney bean stew..... $\frac{1}{2}$ cup
Bread or toast*.....2 slices	Lamb stew*.....small serving
Banana.....1 large	Macaroni.....1 cup cooked
Butter or butterine*.....1 tablespoon	Milk*..... $\frac{3}{4}$ cup
Cocoa*..... $\frac{2}{3}$ cup	Oranges.....1 $\frac{1}{2}$
Cookies*.....2 small	Peanuts.....20 single nuts
Cottage cheese.....5 $\frac{1}{2}$ tablespoons	Prunes.....4
Cream.....2 tablespoons	Potato*.....1 medium
Corn.....2 ears	Sugar.....3 $\frac{1}{2}$ lumps or 2 tablespoons
Eggs.....1 $\frac{1}{2}$	White sauce..... $\frac{1}{4}$ cup

\*Starred foods are illustrated by models of 100 Calorie portions in the school exhibit. A full glass of milk represents a 150 Calorie portion.

Certain foods which have a large fat content are very high in energy value and several 100-calorie portions would be included in an average table serving. One-hundred-calorie portions of such foods are indicated below:

Baked custard..... $\frac{1}{3}$ cup	Mince pie,slice 1 in. at outer edge
American cheese.....1-in. cube	Prunes*.....2 prunes and sauce
Ice cream.....2 $\frac{1}{2}$ tablespoons	Rice pudding..... $\frac{1}{4}$ cup
	Cream soups*..... $\frac{1}{2}$ cup

\*Starred foods are illustrated by models of 200 calorie portions in the school exhibit.

On the other hand, we would find 100-calorie portions of other foods difficult to dispose of at one time; these are foods that have a large amount of water in their composition:

Asparagus.....20 stalks	Lettuce.....3 heads
Beets.....4	Melon.....1
Cabbage.....4 cups chopped	Onions.....4
Cauliflower..... $\frac{1}{2}$ head	Peaches.....3
Celery.....4 cups chopped	Spinach*.....2 $\frac{1}{2}$ cups cooked

This group of low energy foods is illustrated by a model of a 50-calorie portion of spinach in the school exhibit.

The cost of energy by the pound and the cost by the 100-calorie portion are shown in Table I for various common foods.

TABLE I.—ENERGY VALUE AND COST OF VARIOUS FOODS AS PURCHASED

	Measure equal to 1 pound	Cal-ories per pound	Cost per pound May, 1920	Cost per 100 Cal-ories, May, 1920
Grain products—				
Rolled oats.....	5-6 c.	1850	\$.07	\$.004
Cornmeal.....	3 c.	1655	.07	.004
Flour.....	4 c.	1640	.10	.006
Bread.....	1 loaf	1205	.11	.009
Meat, fish and eggs—				
Lamb, forequarter....	10-12 small pieces	1165	.20	.017
Beef, round, lean....	Piece 7x5x $\frac{1}{4}$ in.	670	.40	.06
Eggs.....	8	635	.41	.06
Fresh cod.....	Piece 2x3x5 in.	209	.20	.095
Dairy products				
Butter.....	2 c.	3605	.70	.02
Cheese.....	6-8 c., grated	2055	.42	.023
Milk.....	scant pint	325	.075	
Vegetables				
Potatoes.....	3 medium	310	.06	.019
Carrots.....	4-6	160	.10	.062
Spinach.....	1 $\frac{1}{2}$ -2 quarts	110	.10	.163
Tomatoes.....	2-3 medium	105	.40	.38
Celery.....	3-4 stalks	70	.50	.70
Fruit—				
Prunes.....	28-30	1190	.30	.025
Bananas.....	3-4	300	.12	.04
Apples.....	2-3	220	.11	.05
Nuts				
Peanuts.....	2 quarts	1935	.25	.013
Sugar				
White, granulated....	scant 2 c. *	1860	.20	.01

The cost of other foods on this basis can be calculated from data given in Bulletin 28 issued by the Department of Agriculture entitled "The Chemical Composition of American Food Materials (Revised Edition)." This can be obtained for five cents by sending to the Superintend-

ent of Documents, Government Printing Office, Washington, D. C. The fuel value per pound of all common foods is given in this bulletin.

More complete tables of 100-calorie portions may be found in the appendix of the book on "Feeding the Family," by Prof. Mary S. Rose.

Bulletin 28 of the United States Department of Agriculture, mentioned above, gives the calorie values per pound of all common foods. The cost of the 100-calorie portion can be calculated from the data given if the price per pound is known, as shown in the following example:

AMERICAN CHEESE			
Calories per lb.	Cost per lb.	100 calories	Cost per 100 calories
2055	\$0.42	100	X \$0.019

The number of 100-calorie portions to the pound for certain common foods is given below.

Rolled oats	18½	Potatoes	3
Flour	16	Carrots	1½
Bread	12	Prunes	12
Beef, round	7	Spinach	1½
Eggs	6½	Bananas	3
Butter	36	Peanuts	19½
Milk	31½	Sugar	18½

Table I shows that fresh cod and lamb at the same price per pound cost 1.7 cents and 9.5 cents, respectively, per 100 calories; sugar, even at 20 cents a pound, costs only 1 cent per 100 calories; and butter, even at 70 cents a pound, costs only 1.9 cents per 100 calories.

The last column of Table II brings out the fact that the grain products are the cheap sources of food energy, rolled oats and cornmeal being among the cheapest (.4 cents per 100 calories). Sugar and peanuts come next; while stew lamb, butter, cheese, milk, potatoes, and prunes all cost in the neighborhood of 2 cents per 100 calories. Beef, eggs, carrots, bananas, and apples are more expensive (2 to 6 cents per 100 calories). Fresh cod, spinach, tomatoes, and celery run over 10 cents per 100 calories. It must be remembered, however, that some foods, like spinach and tomatoes, which are costly on an energy basis, are very important and desirable elements in the diet for other reasons.

### Special Materials Required

If the only use we had for food was to get energy from it, vegetables would be counted a luxury, for they yield only from 100 to 300 calories a pound, whereas cereals and sugars give from 1,500 to 1,800, American cheese 2,000, and butter 3,600 calories a pound.

The body has also need, however, of certain special materials of different kinds, for growth and renewal of its tissues. These special materials,—the building stones of the body,—must be provided by the same foods that furnish the energy; but since some foods are rich in these materials and other foods are relatively lacking in them, we must consider quality as well as quantity in selecting a diet. We must obtain (a) the right amount of energy from (b) the kinds of food that will supply all the special building materials we need.

The living tissues of all plants and animals are primarily made up of nitrogen-containing materials called proteins. Therefore all animals and plants must have proteins or protein building materials in their foods.

Most of our common foods contain proteins. Table II is inserted to show the percentages of protein in common foods.

The colored blocks in the school exhibit show the proportion of protein present in four common foods—apples, milk, potatoes, and beef—and the practical absence of protein in butter and sugar.

The fact must not be overlooked that some foods which

TABLE II.—THE PERCENTAGE OF PROTEIN IN COMMON FOODS

I.—Foods which contain less than 5% protein—		III.—Foods which contain from 20 to 25% protein—	
	Per cent		Per cent
Sugar	None	Veal cutlet	20.3
Butter	1.0	Cottage cheese	20.9
Cream	2.5	Shad roe	20.9
All fruits are low in protein, ranging from apples to bananas	0.4 to 1.3	Almonds	21.0
		Turkey	21.1
		Lean round beef	21.3
		Chicken broilers	21.5
		Cocoa	21.6
		Salmon	22.0
		Dried beans	22.5
		White fish	22.9
		Dried peas	24.6
II.—Foods which contain 5 to 20% protein—		IV.—Foods which contain 25% or more protein—	
	Per cent		Per cent
Chestnuts	6.2	Ham	25.0
Oysters	6.2	Salt cod	25.4
Green peas	7.0	Peanuts	25.8
Fresh lima beans	7.1	Cream cheese	25.9
All cereals and breads, ranging from rice to oatmeal	8.0 to 16.0	Tuna fish	26.6
Bacon	10.0	Smoked herring	36.9
Chocolate	12.9		
Eggs	13.4		
All fish except salmon and whitefish and lobster	16.4 to 16.6		
Pork chops	18.0		
Lamb	18.4		
Walnuts	19.3		
Fowl	19.3		

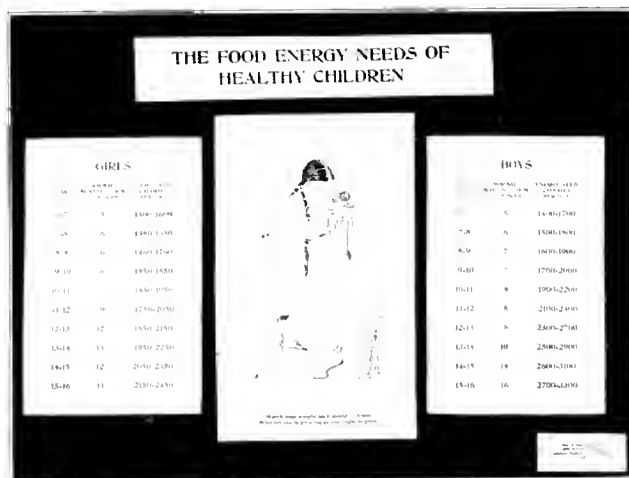


Fig. III. Some means for regular comparison with the standards for the different ages must be provided to insure taking care of the food energy needs of the growing child.

seem low in protein as expressed in percentage contribute, in fact, a large amount of our total protein. Breads and cereals are only 8 per cent protein and yet they may contribute in a normal diet one-third of the daily protein and in abnormal diets a much higher proportion. This is because we eat so much of these foods. An ordinary serving of spinach will yield 4 grams of protein, which is not bad for a food that is over three-fourths water. Because of the fact that most foods contain protein and also because the foods particularly high in protein are "tasty" foods, there is very little danger, in the case of most people, of eating too little protein. Where the income is very low or the diet otherwise specially restricted, protein deficiency may exist; but an excessively high protein diet is also harmful and is entirely too common in this country.

The function of the proteins in foods is to support growth and replace body tissues, and the proteins in some foods are not as useful for this purpose as the proteins in other foods. The most complete variety of proteins can be obtained from milk, eggs, and meat. On the other hand, eggs and meat are costly as general sources of protein. A good rule to follow is to get two-thirds of our protein from cereals and other vegetable proteins, such as beans and peas, because these are the cheapest protein foods, and to get the remaining third from the

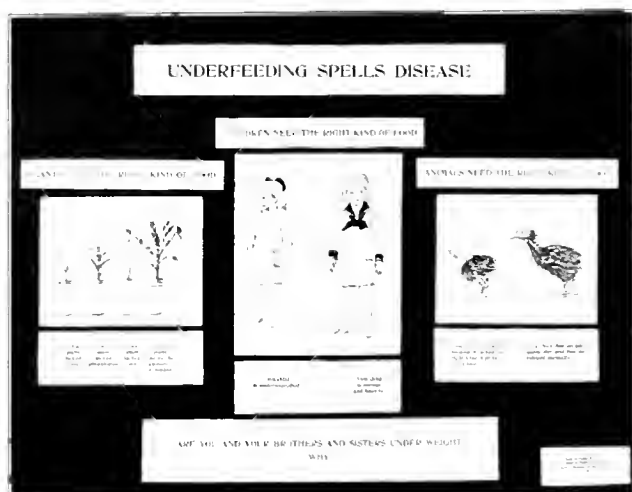


Fig. IV. The function of proteins in foods is to support growth and replace tissue waste. The picture of the two chickens shows the result of a diet deficient in certain kinds of proteins.

complete animal foods such as milk, eggs, cheese, poultry, and meat. Milk is the best protein food for children. The result of a diet deficient in certain kinds of protein is shown in Figure IV.

The standard daily protein requirement for an adult is 75 grams a day, which is about  $2\frac{1}{2}$  ounces.

#### AMOUNTS OF CERTAIN FOODS, EACH OF WHICH YIELDS $\frac{1}{10}$ OZ. OF PROTEIN, OR ONE-TENTH OF THE TOTAL DAILY NEED

1 egg	$\frac{1}{2}$ c. cooked beans.
$\frac{1}{2}$ pint of milk	3 slices bread
1 oz. of cheese	1 oz. shelled peanuts
1 oz. of dried fish	$1\frac{1}{2}$ cups of cooked cereal
$1\frac{1}{8}$ oz. lean meat or fresh fish.	

The standard daily protein requirement of children from 10 to 13 years is from 45 to 62.5 grams, or from  $1\frac{6}{10}$  to  $2\frac{2}{10}$  ounces.

Of the foods illustrated by the models in the school exhibit, lamb stew has the highest per cent of protein, but the greater part of the total daily supply is, and should be furnished by the milk, bread and cereals.

### Mineral Salts Required

The body requires sixteen or more chemical elements in its food. The ordinary diet will furnish these elements in abundance except in the case of calcium, iron, and phosphorus, which are very unequally distributed in foods and are often deficient in the ordinary diet.

It is necessary to take special precautions to include in the diet foods that furnish amounts of calcium, iron, and phosphorus sufficient to meet the needs of the body, since the mineral salts determine the condition of the blood and tissues. Deep seated disturbances are likely to result if the proper balance of these elements is not furnished by the food. Fig. IV shows the effect of the lack of certain salts upon plant growth.

**Calcium.**—The ordinary American diet is apt to be lacking in calcium because we Americans eat too much meat, bread, fat, and sugar—foods low in calcium—and too small a portion of milk and vegetables—foods high in calcium. The standard daily calcium requirement of an adult is 0.68 grams. For children from 10 to 13 years of age the calcium requirements from 0.414 grams to 0.575 grams.

Milk is the most important source of calcium. A little over one pint a day will supply the entire needs of an adult. Children should have a quart of milk a day. Meats, highly milled grains, fats, and sugars are among the common foods lacking in calcium.

#### COMMON FOODS HIGH IN CALCIUM

Kinds of foods	Amounts, each of which yields $\frac{1}{10}$ of the daily requirement of an adult.
Dairy products—	
Cheese	piece 1 in. square x $\frac{1}{2}$ in. thick
Milk*	$\frac{1}{4}$ cup
Eggs	2 eggs
Fresh vegetables—	
Cauliflower	$\frac{1}{6}$ head
Spinach*	$\frac{1}{2}$ cup, cooked
Turnips	2 medium
Carrots	scant cup, cooked
Dried vegetables—	
Beans	$\frac{1}{3}$ cup
Peas	$\frac{1}{3}$ cup
Fresh fruit	
Oranges	$1\frac{1}{2}$ oranges
Dried fruit—	
Figs	$2\frac{1}{2}$ figs
Dates	16 dates
Prunes*	14 prunes

\*High calcium foods illustrated by models in the school exhibit. Others are cocoa, rice pudding, and tomato soup, largely because of their milk content.

**Iron.**—The amount of iron that the body needs is very small, but nevertheless important, because iron forms a constituent of all body cells and particularly of the oxygen carrying material of the red blood cells.

The standard daily iron requirement of an adult is 0.015 grams; the iron requirement of children from 10 to 13 years ranges from 0.009 to 0.013 grams of iron.

#### COMMON FOODS HIGH IN IRON

Kinds of food	Amounts, each of which yields $\frac{1}{10}$ of the daily requirement of an adult.
Dried vegetables—	
Beans	$\frac{1}{3}$ cup
Peas	$\frac{1}{3}$ cup
Meat and fish	
Oysters	3 oysters
Salmon	$1\frac{1}{2}$ oz.
Beef	$1\frac{1}{2}$ oz.
Eggs	1 egg
Fresh Vegetables	
Spinach*	$\frac{1}{4}$ cup, cooked
Peas	$\frac{3}{4}$ cup
String beans	$1\frac{1}{4}$ cup, 1-inch pieces
Cabbage	2 cups chopped
Potato*	1 medium
Certain cereals and breads—	
Oatmeal*	$\frac{1}{2}$ cup
Whole wheat bread*	$2\frac{1}{2}$ slices
Dried fruits—	
Dates	8 dates
Figs	3 figs
Prunes*	5 prunes
Raisins	$\frac{1}{2}$ cup

\*Starred foods, high in iron, are represented by models in the school exhibit.

Among the common foods lacking in iron may be mentioned sugars and starches, fat pork, bacon, lard, suet, butter, oils, and candy.

### Phosphorus Necessary

There is less chance of a lack of phosphorus than of calcium or iron, because the foods that are high in proteins are usually high in phosphorus, too; yet it is wise to pay some attention to the phosphorus containing foods of our diet.

The standard daily adult phosphorus requirement is 1.44 grams. The standard daily phosphorus requirement of children from 10 to 13 years is 0.864 to 1.2 grams.

Until recently it was thought that the diet was adequate if it provided sufficient energy, the proper amount and kinds of proteins, and the correct balance of mineral salts, and water. It is now known that animals and human beings may be fed upon diets adequate in all these respects and yet may fail to grow or develop certain diseases which may prove fatal (Fig. V).

Besides adequate energy, proteins, mineral salts, and water, there are at least three additional dietary essentials called "vitamines." They are named as follows: (1) Fat-Soluble A vitamine, which promotes growth and protects against xerophthalmia, a diseased condition of the mucous membranes, especially of the eyelids; (2) Water-

FOODS HIGH IN PHOSPHORUS

Kinds of food	Amounts, each of which furnishes 1/10 of the daily adult requirement.
American cheese—	
Cheese .....	3 1/2 oz.
Legumes—	
Dried beans and peas .....	1 1/2 cup
Fresh peas, shelled .....	1 cup
Nuts—	
Almonds, shelled .....	28 nuts
Peanuts, shelled .....	38 nuts
Grain products—	
Oatmeal* .....	1 1/2 cup
Whole wheat bread* .....	2 1/2 slices
Cornmeal .....	1 1/2 cup
Meat and fish—	
Salmon .....	2 1/2 oz.
Beef .....	2 1/2 oz.
Lamb* .....	3 oz.
Milk—	
Milk* .....	2 3/4 cup

\*Starred foods, high in phosphorus, are represented by models in the school exhibit. Other foods in the exhibit that are high in phosphorus are: rice pudding, tomato soup, spinach, cocoa, potato and prunes.

Soluble B vitamine, which protects against the diseases polyneuritis and beriberi; and (3) Water-Soluble C vitamine, which protects against scurvy.

There is little danger of a lack of the water-soluble vitamins in the ordinary diet unless this diet is limited to very few foods. When we come to consider the fat-soluble A vitamine, the case is different. This vitamine is very unevenly distributed among our foods and it is important to choose foods that will insure an adequate supply. The fat-soluble A vitamine is found chiefly in milk, butter fat, egg yolk, leaves of plants, and glandular organs such as liver and kidneys. As a matter of fact, because of such questions as bulk, dietary habits, and cost, we depend chiefly upon milk for our supply of fat-soluble A vitamine.

### Water Important in Nutrition

A surprisingly large proportion of the bodies of all plants and animals consists of water and, although water furnishes no energy, it plays an important part in nutrition. A man may live a month or more without other foods, but he cannot go without water for over four or five days, the reason for this being that all vital processes take place in solutions of which water is the basis. The blood is largely water and carries the foods in solution to the body cells. These cells lie bathed in lymph, which is also largely water and contains foods in solution. The kidneys get rid of the waste products as solutions. Hence the great need for water as a solvent.

The human body is more than three-fourths water. There is a large amount of water in most foods. In general the proportion of water in foods is as follows: Vegetables and fruits, over four-fifths water; except bananas, potatoes, corn and grapes, which are three-fourths water; milk and oysters, three-fourths water; meats, fish, and eggs, over one-half water; American cheese, bread, and prunes, about one-third water; cereals, dried fruits, and fats, one-eighth to one-tenth water; cocoa, chocolate, and nuts, very little water; and sugar, no water.

The colored blocks which accompany the school exhibit show the proportion of water in certain foods.

In order to obtain a sufficient supply of water one should

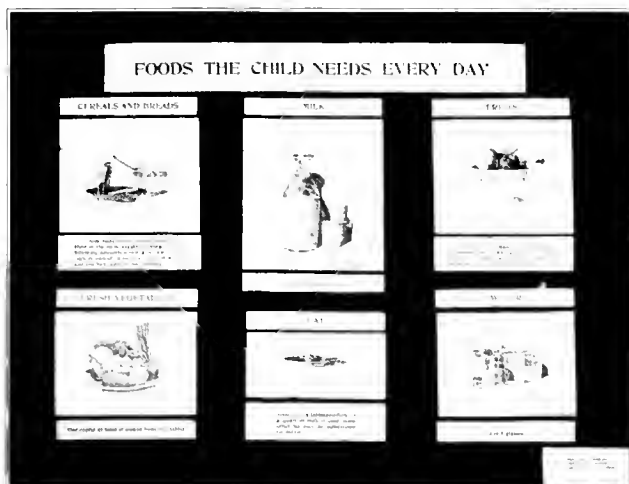


Fig. V. The most convenient manner of regulating food properly is by means of a food plan or dietary. This is a graphic presentation of the child's daily food requirements.

drink about a quart a day, in addition to the water contained in other foods.

(To be continued)

### IMMIGRATION AND DISEASE

In the annual report of Public Health Service recently submitted to Congress, Surgeon General Cummings discussed the favorable conditions which exist in many central European localities for the outbreak of epidemic diseases, the saving feature of the whole situation being the restriction of travel from one country to another. In spite of preventive measures at European ports of departure, typhus fever has broken out on several of the vessels bound for the United States. The detection of the disease on the arrival of vessels at port and the measures enforced along the Texan-Mexican border have so far been effective.

While conditions in the United States probably preclude a serious epidemic of typhus fever, dire results would be produced if the infection were introduced into tenement sections of the larger cities.

### SCHOOLS FOR HOSPITAL ATTENDANTS

Bird S. Coler, Commissioner of Public Welfare, was instrumental in the establishment, some time ago, of four schools in New York City for the training of hospital attendants. These schools are at the City Neurological Hospital, Blackwell's Island; the New York Children's Hospital, Randall's Island; Sea View Hospital, Staten Island, and Greenpoint Hospital, Brooklyn. The pupils are being instructed in the principles of hospital treatment and how to care for simple and ordinary sick and chronic cases. They are the first schools of the kind to be established.

### SALE OF ASPIRIN RESTRICTED IN ARGENTINA

The Argentine Health Department has decided to restrict the sale of aspirin except as prescribed by a physician. For another six months druggists will be permitted to continue the unrestricted sale of those brands of aspirin or of medicines containing aspirin that are already on the local market, but no new ones may be introduced. After the six months has expired the sale of the old brands will be prohibited also, except on the requisition of an authorized medical practitioner.

## CONGRESS ON MEDICAL EDUCATION

On March 7, 8, 9, and 10, 1921, a joint conference will be held in Chicago on medical education, licensure, public health, and hospitals, participated in by the Council on Medical Education and the Council on Health and Public Instruction of the American Medical Association, the Association of American Medical Colleges, the Federation of State Medical Boards of the United States, and the American Conference on Hospital Service. The program includes a symposium on graduate training in the various medical specialties, and discussion of a series of reports on clinical subjects of the medical curriculum and of matters pertaining to medical examinations and licensure. On Wednesday afternoon there will be a conference on hospital service, with tentative announcement of the following speakers: Dr. Frank Billings, Dr. S. S. Goldwater, Father Charles B. Moulinier, Miss Lulu Graves, and Miss Donelda R. Hamlin. There will be a general discussion on "The American Conference on Hospital Service," by Dr. George E. Vincent, or Mr. E. E. Embree of the Rockefeller Foundation, New York; Dr. Ray Lyman Wilbur, president of the Leland Stanford University, San Francisco; Dr. William J. Mayo, Rochester, Minn., and other prominent speakers. Thursday afternoon will be given over to the discussion of work for the public health, as follows: "From the Standpoint of the Council on Health and Public Instruction of the American Medical Association," Dr. W. S. Rankin, secretary, North Carolina State Board of Health; "From the Standpoint of the State Health Officer," Dr. S. J. Crumbine, secretary, Kansas State Board of Health, Topeka, Kans.; "From the Standpoint of the State Medical Society," Dr. F. C. Warnshuis, secretary, Michigan State Medical Society, Battle Creek, Mich.; "From the Standpoint of the State Public Health Association," Celestine J. Sullivan, secretary, League for the Promotion of Public Health, San Francisco; "From the Viewpoint of the Voluntary Public Health Association," Dr. Charles I. Hatfield, secretary, National Tuberculosis Association, New York.

## GORGAS CLAIMED FOR ALL HUMANITY

Representatives from many nations assembled with prominent army and navy officers and other dignitaries attached to the United States Government assembled under date of January 16 under the auspices of the Southern Society of Washington to do honor to General Gorgas.

The Ambassador of France, Major Gen. H. K. Bethell, Military Attaché of the British Embassy, representing the British Ambassador; the Ambassador of Peru, the Ministers of Cuba and Ecuador, the Chargé d'Affaires of Panama, the Secretaries of War and Navy, Dr. L. S. Rowe, Director General of the Pan-American Union; Major Gen. Peter Charris, Adjutant General U. S. A., and General Clarence J. Owens, Past President of the Southern Society, were the speakers. Cablegrams of tribute to General Gorgas were read from the residents of Uruguay and Costa Rica and from the Government of Columbia.

Congress will be asked to make appropriation for a suitable memorial to General Gorgas to be placed in Washington, it was announced; and further tribute will be paid to the former Surgeon General by the presentation of a painting of him to the Government by the Southern Society, to be placed in the library of the Surgeon General's office.

"Gorgas honored the United States of America, but his fame and his work now belong to the world," declared

the Minister of Cuba, Dr. Carlos Manuel de Sespedes, in his speech of tribute.

After speaking of the sanitary work done by General Gorgas in Ecuador, the Minister from that country, Señor Rafael H. Elizalde, said: "He came among us with outstretched hand and purity of purpose, winning our hearts. We are proud to owe a great national debt to him."

The Ambassador of Peru, Señor Frederico A. Pezet, spoke of the way in which from 1884 to 1889 he "saw men arrive from France, full of energy, impregnated with the national trait of a courage that knows no fear, with a pride of nation and race, arrive one day to become stricken the next and but a few days later to be laid in their resting places. The scourge of the tropics more than any other cause served to defeat the French in their attempts to construct the canal. The failure of France was the incentive that made possible the victory of America." While the work of General Gorgas in Cuba had been noteworthy, said the Ambassador, it was in Panama that he reached the pinnacle of greatness.

The Chargé d'Affaires of Panama, Señor J. E. Lefevre, in his remarks said: "Although we are earnestly endeavoring further to honor the memory of our illustrious friend by the establishment of the Gorgas Tropical Institute for Research at Panama, we are doing it as a national tribute."

Major Bethell of the British Embassy said of the services of General Gorgas: "They were not limited to a nation; they were given to mankind. To us who are British they were of peculiar value, for we have many tropical possessions which present difficulties of health maintenance not dissimilar to those he faced and conquered in Panama."

Dr. Rowe of the Pan-American Union declared that "General Gorgas was, in the highest sense, a typical American. I use the word American in its broadest continental connotation, for, if the test of citizenship is service to the community, General Gorgas deserves to be regarded as a citizen of the American continent."

## DR. HOUGHTON RECEIVES APPOINTMENT

It is announced from the Rockefeller Foundation that Dr. Henry S. Houghton has been appointed director of the Peking Union Medical College. Dr. Houghton, a graduate of the Ohio State University and the Johns Hopkins Medical School, has spent the greater part of the last fifteen years in China, where he has served as physician of the WuHu General Hospital, as dean and professor of tropical medicine of the Harvard Medical School of China in Shanghai, and recently as a member of the staff of the China Medical Board and Peking Union Medical College in Peking.

## SOUTHERN MEDICAL ASSOCIATION

The Southern Medical Association at its closing session on November 18, in Louisville, elected Dr. J. L. Crook, of Jackson, Tenn., as president; Dr. E. H. Block, of Atlanta, first vice-president; Dr. G. A. Hendon, of Louisville, second vice-president; Dr. Seale Harris, of Birmingham, re-elected secretary. Hot Springs, Ark., was selected for the next annual meeting.

## DR. ROBINSON GOES TO NASHVILLE

Dr. G. Canby Robinson resigned, July 1, 1920, his position as dean of the Medical School. He was elected to the position of professor of medicine and dean in the Vanderbilt University School of Medicine, Nashville, Tenn. He enters on his active duties there in September, 1921.



# PUBLIC HEALTH NURSING

## Industrial, Social, School, and Rural Nursing, Maternity Care, Child Welfare

KATHERINE M. OLMSTED, R. N., *Editor*

### ARE YOU TO BE COUNTED A FRIEND?

THE National Organization for Public Health Nursing is organizing state committees known as "The Friends of Public Health Nursing," as part of the plan to secure fifty thousand new members. They have stated that the United States needs five times its present number of public health nurses. This Organization is undertaking the largest piece of work in its history. It is beginning this month a campaign for increasing its membership, interesting the young women of the country in the profession of public health nursing, and inspiring the public in general to a larger measure of devotion to matters of public health. Through the press and through committee activities the entire field of school, industrial, district, and the other types of public health nursing will be presented to America's millions of people until there is a universal insistence upon the establishment of this form of nursing in every community of the United States and the lifting of nursing in general to a level not reached by it in the past.

Chairmen and committees have already been appointed in many of the states of the Union; and a program outlining the steps to be taken for the accomplishment of the end is being directed from the office of the N. O. P. H. N. at 156 Fifth Avenue, New York City. Specifically, the purposes of the work are to widen the usefulness of the organization throughout the country, to increase the lay membership by at least fifty thousand, and to raise \$150,000 for carrying out the plans of the future.

At the present time there are in this country about ten thousand public health nurses. On the basis of one such nurse to every two thousand of population, the organization hopes that by the time it has attained a lay and professional membership of sixty thousand it will eventually be able to bring about a fifty thousand increase in the number of public health nurses. Especially in those communities where there is not a single industrial, school, district, or other visiting nurse will the work be directed toward a stricter attention to matters of public health.

At the same time there will be activities looking toward a general elevation of the plane of nursing of this type. The N. O. P. H. N. has taken upon itself the task of setting the requirements for new schools that are to be opened and the endorsing of such schools already in existence. Recently it announced that eighteen courses in public health nursing had been approved and that the educational secretary was at that time making a study of still other schools and was acting in an advisory capacity for at least one school soon to be opened. Noteworthy work in the standardization of nursing may be accomplished by such an organization as the N. O. P. H. N.

Several of the states of the Union are engaged in the

consideration of legislation favorable to public health nursing and the N. O. P. H. N. is prepared to assist with problems of this kind. There is no doubt that legislation more extensive than the mere production for the education of the public on the merits of public health nursing would be of distinct value and, if this message may be brought before the citizens of this country, the Organization is confident that the other purposes of its movement will be accomplished.

But its only present hope for the spread of its message through the assistance of the public health nurses who are members of the Organization. With this in view it is the plan to attempt to enroll every one of the 10,000 public health nurses in the country in the National Organization for Public Health Nursing as a foundation for the greater membership of lay supporters. Nurses eligible may apply for membership by letter to National Headquarters at 156 Fifth Avenue, New York City.

Nurses eligible for active membership in the N. O. P. H. N. need not necessarily be engaged in public health nursing. Private duty and hospital nurses should join this Organization, which has become a clearing house for general information on all nursing problems and has been recognized as a standard bearer and publicity expert for nursing propaganda, and which has done so much to dispel the general inertia in regard to the nursing profession.

Professor C.-E. A. Winslow of Yale University, recently said:

I consider that the National Organization has rendered and is rendering and must continue to render, an absolutely invaluable service in guiding and coordinating the development of the new profession of public health nursing. I know of no other social development comparable in magnitude with the growth of public health nursing and this Organization is the one agency which can furnish the inspiration and the counsel and the organizing and correlating power to keep the growth along sound and progressive lines.

Miss Lillian D. Wald, director of Henry Street Settlement of New York City, says:

The National Organization for Public Health Nursing has been established but a few years and during its brief life it has demonstrated over and over again its usefulness—I think it no exaggeration to say—the necessity of its existence at this time. Before the organization was established, America was strewn with the remains of well intentioned but inefficiently administered nursing associations for the people. The existence of these organizations was ephemeral and that is not surprising.

Well meaning and public spirited people felt the need of the service of the nurses in the community, but the need was most apparent in remote country regions where contact with workers and their inspiration is cut off and a standard of work was not possible. Often splendid nurses were lost to the community because of their isolated situation and it required nothing less than a genius to establish a standard, secure support and understanding, and

meet the many and varied problems that arise in work of this kind.

Here and there inspired groups with a faculty for organizing, and a nurse equal to all the demands, did work out splendid systems, even in isolated regions; but this was exceptional as it would have been in any field of technical and practical service. The National Organization came into being at the psychological moment, at a time when the demand for the public health nurse was growing greater every day and when there was a danger of wrecking an instrument of value because of a casual and unprofessional method. Through the expert advice available there is no association for public health nursing in the country that cannot secure advice and help when advice and help are needed.

Despite the fact that more than a quarter of a century has elapsed since the first public health nurse, in our present understanding of the term, was established, the subject is new to the people at large and an organization like the N. O. P. H. N. is absolutely essential and will be necessary for some years to come, an organization that can assemble the best thought and the most valuable experience for the beginner and for the least experienced; that can guide and coordinate community service and standardize it so that there will be the least waste and the greatest economy of time and money.

The service to the community rendered by the N. O. P. H. N. makes available the technique and the experience that has been found successful in the saving of lives and the socializing of the homes. It is an agency which can both inspire and standardize and at the present time there is no appeal greater than the appeal to nurses and public spirited people throughout the land to use their resources and their influence for a better kind of Americans.

This has startled many into a realization of the physically unfit, but those who have traced civilization by infant mortality curves know best how much is to be done and what great fields are unexplored. Life, itself, to a very great degree, is dependent upon popularizing the science of healthful living. The nurses working in the homes and in the community have the opportunity of popularizing this science.

For that reason the N. O. P. H. N. is justified in asking for support from nurses and from others that there may be the fullest development of their contribution to our America.

Miss Julia Lathrop, Federal Children's Bureau, Washington, says:

Nursing is doubtless the newest of the professions and its right to exist as a servant of humanity is not yet fully realized.

Public Health Nursing is still newer. The power of the public health nurse to aid in the constructive betterment of social and civic conditions is realized by few.

In the large towns other agencies relieve the public health nurse of many duties which are most important in the country. The greater part of our population lives outside the great cities, indeed outside the small cities. The lack of attention to sanitation, the remoteness from help in emergencies have been described again and again but no one had devised any real remedy until the pioneer public health nurse offered herself and her Ford. She is trained in the best methods of bedside nursing and she is also trained in the knowledge of what the community as a whole needs in order to safeguard the health of the family and of the children at school or away from home. She has a steady head and a good heart and much understanding of the fine art of persuasion.

Of all this equipment Nature bestows the vigor, the aptitude, the generous courage. Training and hard work do the rest. As yet we have only the pioneer. We need thousands of public health nurses for rural work alone. It is because of the national need for public health nursing and the painful lack of nurses that this Organization is needed to (1) interest the right type of young women in the profession; (2) to secure proper training schools, based upon the needs of the student; (3) to secure the endowment of schools of nursing, as are other good schools; (4) and to serve as a center of stimulus and inspiration to the nurses themselves.

The National Organization for Public Health Nursing will have an international influence, for nowhere is the public health nurse more needed than in the war wrecked parts of Europe where she is unknown. To aid in dig-

nifying and encouraging the profession of nursing in central Europe is a worthy enlargement of the home duties of the N. O. P. H. N. The organization will not allow itself to think or act in a small way. Its possibility of service is nation-wide and world-wide.

The Organization is in need of more support by the nurses of the entire country. They are depending upon that support. Let us not fail our own Organization in this their first campaign for membership. You join—make your friends join—let us all join and do it now!

EDITOR.

## CHICAGO NURSES' CLUB AND DIRECTORY

It will be of great interest to many nurses to know a little about the two-fold organization, the Chicago Nurses Club and Directory enterprises of the First District. Despite seeming competition of other nursing registries, this directory has thrived and expanded, no doubt due to the united support given us by our women in charge of the various hospitals in personally calling for nurses for duty in the hospitals and referring nurses for membership who come to their attention.

About six months ago another step was taken toward our visualized club of the future by moving the directory office and opening club rooms in a central location convenient to all nurses. Immediately the wisdom of this change was evidenced by the frequent use made of the club rooms by members, and the opportunity given the registrar for getting better acquainted with directory members with whom formerly she had had only a telephone acquaintance.

The plan is eventually to have a large club building, fully equipped with parlors, gymnasium, dining room, library, etc., and this should not be unattainable if we could secure the interest of all nurses of our city and state. It would provide accommodations for out-of-town members when visiting the city as well as privileges for local members.

## INSTITUTES FOR INDUSTRIAL NURSES

Inquiries concerning Institutes for Public Health Nurses to be held during the summer of 1921 are already coming into the office of the National Organization for Public Health Nursing. The experiences of those who conducted Institutes last year proved that plans for summer conferences of this sort should be made early in the year.

It has been suggested that, in view of the great demand and apparent need for such institutes, it will be better if the responsibility for them is carried by nurses in each state or at least in groups of states, making it easier and cheaper for nurses to attend.

The *Public Health Nurse* will publish during the spring and early summer reports of institutes held in various places last year as a guide to those who are undertaking them for the first time.

## ROTARY CLUB ESTABLISHES MILK STATIONS

The Rochester (New York) Rotary Club has equipped and is conducting four milk stations in the city of Rochester to save underfed babies. These milk stations are being conducted at a cost of approximately ten thousand dollars a year.

But a man is never content with the result of his work. He is ever eager to improve upon it; to discover new methods of performing it; to invent instruments and tools which will facilitate it.—*Mackenna*.

# MOUTH HYGIENE FOR SCHOOL CHILDREN

BY ALFRED C. FONES, D.D.S. DIRECTOR, DIVISION OF DENTAL HYGIENE, DEPARTMENT OF HEALTH,  
BRIDGEPORT, CONN.

IT IS now universally conceded that the most conspicuous defect of the school child is the unhygienic condition of his mouth. The reports of the medical inspectors in the public schools who have made but a glancing examination of the mouths of our school children indicate that decayed teeth outrank all other physical defects combined. Careful dental examinations reveal the fact that it is difficult to find two school children out of a hundred with a sound set of teeth, and that the average is seven cavities per child. How to overcome the appalling condition, how to establish clean mouths, sound teeth, and the tooth brush habit,—this is the most important public health problem facing the medical and dental professions and the educational authorities of today.

## School Dental Clinics the Answer

Ideas differ regarding the service which school dental clinics should render. The dental clinic which attempts to fill the teeth of school children usually fails in its purpose of materially helping the situation because it is never possible to cope with the enormous number of children needing dental attention, and such a clinic resolves itself into a fine charity for a few. In Bridgeport, Conn., we had to face the problem of 20,000 children in the first five grades alone, averaging seven cavities apiece, or 140,000 cavities. Even were wholesale extraction considered, it would require two years for a corps of twenty-five dentists properly to restore these mouths to a healthful condition. Such an expensive proposition could not be considered for the following reasons: (1) City officials do not, as yet, sufficiently appreciate the immense importance of sound teeth to good health to be willing to appropriate the large sum of money that it would require; (2) unless followed by a definite system of prophylaxis such work would be merely palliative and in a few years the same children would again be affected with dental caries, while an equal number of new children were still uncared for; and (3) until parents and children are educated to the importance of caring for the mouth, the making of such operative work compulsory would cause much trouble. But the most important reason seemed to be that, even if funds were available, the task would be hopeless because it would not stop the trouble at its source, but merely repair the damages after they had occurred.

It was finally decided to start on the preventive side and evolve a plan which could be incorporated as an active part of the school system. The result was the educational and preventive dental clinic,—a plan whereby the municipality accepted one-half of the responsibility, that of aiding and educating the children in the prevention of decay; while the home care of the mouth, and proper feeding was to be assumed by the child and his parent,—a fifty-fifty basis.

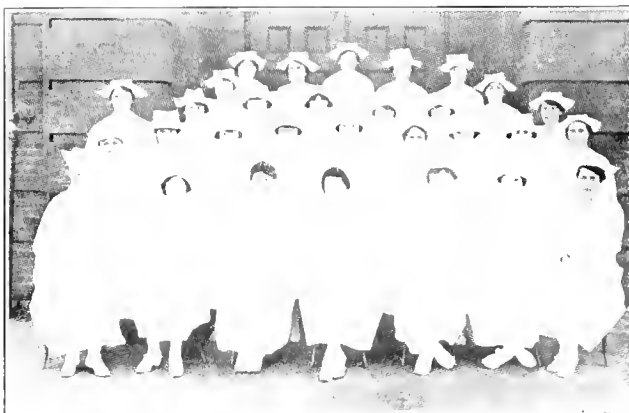
Before the operation of the clinic is described, it may be well to review briefly the causes of dental caries and the most widely accepted methods of prevention.

It has been frequently proved in private practice that 80 to 90 per cent of dental decay can be prevented by a system of extreme cleanliness and correct diet, especially in the elimination, or at least the restriction of the consumption of free sugars. For thirty years we have known definitely that the actual cause of dental caries

was the action of microorganisms on sugars and starches, reducing them to lactic acid, which is the solvent for the cementing substance joining the enamel rods. The lactic acid, in turn, precipitates the mucin from the saliva upon the teeth, forming a glue-like protection or plaque for the fermenting carbohydrates and microorganisms. The bacterial plaque is then regarded as the initial cause of dental caries. We know (1) that the frequent removal of plaques and accretions from all the surfaces of all the teeth by means of hand polishers is the most efficient means, aside from a correct diet, for the prevention of dental caries; (2) that the faithful, daily use of the tooth brush, floss silk, and a mouth wash (such as lime water prepared from coarse calcium oxid) is the best known means for the thorough removal of food debris and the dissolution of mucin; (3) that nearly all microorganisms in the human mouth are harmless if deprived of a pabulum, such as food debris, upon which to feed, develop, and multiply.

## Diet the Basis of the Difficulty

It was of course realized that, although it was possible to begin at once with the actual prophylactic operative work, the educational work of the clinic would necessarily be a slow, painstaking process. When the diet of the American child is considered, it is not astonishing to find that dental caries is a universal malady. Originating, as it does, from carbohydrate fermentation upon the teeth, no other result could be expected among the children of a nation averaging nearly one hundred pounds of sugar per capita per year. The author personally believes that a well balanced diet in childhood with special emphasis upon foods of high calcium content and the elimination of free sugar, would result in practical immunity from dental caries, even in the absence of a rigid system of mouth cleanliness. The causes of susceptibility and immunity are still under investigation, but it is reasonable to believe that susceptibility is mainly in proportion to the con-



The problem in Bridgeport of caring for twenty thousand pupils in the first grade whose teeth showed an average of seven cavities each was met by training an auxiliary corps of school dental hygienists.

sumption of free sugar, and that in a great measure immunity is acquired by the absence of free sugar in the dietary. Among the peasant classes of Italy, Greece, the Balkan States, Germany and other countries, where the

diet consists mainly of coarse foods, vegetables, and fruits, but where free sugar is a luxury that cannot be indulged in, decayed teeth are the exception and not the rule. This is true also of the Esquimaux, the African Negroes, the American Indians, the Maoris of New Zealand, and many of the South Sea Islanders.

The medical profession is, to a great extent, responsible for the situation, for the family physician has taught mothers to believe that free sugar is an essential food for growing children. Under the existing conditions what chance has an American child to have sound teeth? If he is a modified milk baby, sugar is added to the milk in the proportion of one ounce in twenty, at only a few weeks after birth, and all too frequently cane sugar takes the place of milk sugar. The taste and craving for sweetened foods is developed at once and is steadily encouraged as he progresses to cereals with sugar, puddings, jellies, sweetened crackers, etc. To the normal sugar supply found in milk, vegetables, and fruits, and in the conversion of starchy foods, is added an ever increasing amount of free sugar at meal time, augmented between meals by soda water, ice cream, and candy.

There can be but one result; the deciduous teeth are attacked by dental caries. At the beginning of his school life the child presents a wrecked mouth, and it is only a matter of time before the permanent teeth are similarly affected.

It was impossible to secure graduate dentists for prophylactic work, but fortunately such service does not require a dentist. The need for semi-medically and dentally educated prophylactic workers to care for these children was the inspiration for the first training course for women, known as dental hygienists, in Bridgeport, Conn., in 1913. The efficiency of these women in carrying out educational and preventive measures is now an established fact. Our clinic was opened in September, 1914, in the first and second grades of the schools, and it was planned to conduct a five year demonstration of this type of clinic. The corps consisted of eight dental hygienists and two supervisors. There were four distinct parts to the system: (1) the prophylactic treatment, or the actual cleaning and polishing of the children's teeth, and chart examination of the mouths; (2) tooth brush drills and class room talks; (3) stereopticon lectures for children in the higher grades; and (4) educational work in the homes by means of special literature for parents. The prophylactic treatment consisted mainly in the thorough cleaning, by means of orange wood sticks in hand polishers, of every surface of every tooth. This meant that the dental hygienist would remove all stains and accretions from the surfaces of the teeth, and especially the mucilaginous films, known as bacterial plaques, which are the initial step of dental decay. The treatments were given in the schools, the equipment being portable and adapted to almost any location. Every child received the same treatment, regardless of the financial status of the parent; in short, this preventive system was incorporated as part of the school curriculum. Some parents objected, thinking the work was a charity, but with a better understanding of the project the objections were soon withdrawn.



One of the dental hygienists performing a prophylactic treatment. This gives a good view of the portable dental equipment.

The tooth brush drills were given by the supervisors, and a method of mouth brushing was taught for use in the home. No attempt was made to use water and a dentifrice in the class room as this would prove too mussy. Class room talks concerning foods, cleanliness, etc., were part of the drill. The total number of children examined and treated in the first and second grades the first year was 6,768. On the first examination less than 10 per cent were brushing their teeth daily. About 30 per cent claimed that they brushed their teeth occasionally, while 60 per cent were frank enough to state that they did not use a tooth brush. Of the children 10 per cent were found to have fistulae on the gums, showing the outlets of abscesses from the roots of decayed teeth, and they averaged over seven cavities per child. It was shocking to find the mouths of these children, ranging from five to seven years of age, in this deplorable condition, and it was appalling to contemplate the conditions that would result in these mouths as the children grew up. It presented very interesting material to work with.

In September, 1915, six additional hygienists were added to the corps to advance the work to cover the first three grades. This gave a sufficient number of workers until 1917, when six more were added, so that this care could be given to all the children in the first five grades, numbering about fifteen thousand.

### Extended as a Health Measure

In January, 1918, the parochial schools petitioned the Board of Health and also the Board of Apportionment to have this system extended to them as a health measure. This petition was granted, and in September six more hygienists were added to the corps for this purpose, making twenty-six in all. At the present time these women have under their care the mouths of nearly twenty thousand children in the first five grades.

We have also employed three women dentists, who are filling the small cavities in the first permanent molars for the children in the first and second grades. Many of these children, on entering school, show small cavities developing in these important teeth, and in order that all the children may start on an equal basis in the future prevention of dental decay of the permanent teeth, all are eligible and are encouraged to have these small cavities filled.



A graduate woman dentist, who is engaged in filling the fissure cavities in six year molar teeth.

This clinic has been a pioneer work in a city with a large foreign population of which many parents do not speak English, and was carried on during the war period which necessarily produced very unsettled conditions in the schools of a large munitions center like Bridgeport. In fact, no period could have been more unpropitious for a serious demonstration of

this kind and we feel that the value of education and prevention was put to the hardest possible test.

In making this demonstration it was not our expectation to make a startling reduction in the percentage of dental decay, the main object being to show up the pernicious mouth conditions prevailing among school children and to prove the value of prevention and education in

mouth hygiene for great numbers of children in preference to extensive repair clinics with no effort to eliminate the source of the trouble. It would, of course, have been ideal to have had the two types of clinic and to have put the children's mouths in sound condition, but funds were not available for this purpose, and the excellent report shown is merely the result of education and prevention.

In order to prove definitely the value of education and prevention it was necessary to have data of the condition of the mouths of children in a higher grade who had always been without the advantage of prophylactic treatments, tooth brush drills, and education in mouth hygiene. The children of the fifth grade were chosen as a control class, and our report presents the comparison of their mouth conditions with the present fifth graders, who have had prophylactic treatments and education in mouth hygiene for the first five years of their school life. They have had no repair work provided for them, and the educational side has been three-quarters of the work of the dental hygiene corps.

The demonstration was conducted in thirty schools, and this year twenty thousand individual children received this treatment and education. Our records show that the permanent teeth of children carried through the five year demonstration show, at the end of the period, a reduction of 33.9 per cent in dental caries. One year later, in 1920, the reduction in dental caries was 49.6 per cent. The record in some schools was quite remarkable, the average in one school being 67 per cent, and several schools averaged 57 per cent.

Aside from dental decay, the most noticeable defect in the mouths of school children is lack of proper relationship between the jaws and teeth, or malocclusion. The symmetrical development of the brain case and the bones of the face, as well as good digestion, is dependent upon a perfect masticating machine. It was astonishing to note that malocclusion was present in 98 per cent of all the children examined in the past five years. This deplorable condition could be remedied to a great degree by the feeding in early childhood of the hard, coarse foods requiring pressure for thorough mastication, and by the prevention of any pernicious habits, such as thumb sucking, the use of pacifiers, mouth breathing, etc. Undoubtedly adenoids would be prevented to a marked degree if the roof of the mouth could be broadened and lowered by such pressure exerted in chewing. This would permit of wide nasal cavities that would be conducive to nose breathing and proper functioning of the nasal passages.

When but two per cent of our school children have regular teeth, it adds to the difficulty of eliminating dental decay, since irregular teeth offer the greatest opportunity for the formation of cavities, and render the thorough cleansing of the mouth very difficult.

### Related to Retardation

Our superintendent of schools states that clean mouths have had a very marked effect in reducing the condition of retardation which, in 1912, had assumed alarming proportions. One needs only to consider the financial side to recognize that any reduction in retardation is an accomplishment to be sought for through all legitimate means. During the period of our demonstration retardation was reduced 50 per cent, and the cost for re-education which formerly equalled 42 per cent of the entire budget was reduced to 17 per cent of the entire budget. This really wonderful change could not be accounted for by reorganization of curriculum, or change in teaching forces, although these factors were, of course, important. It seems fair to conclude, after a detailed study of the school sit-



The municipality of Bridgeport has accepted the responsibility of caring for dental defects by training the children in preventive methods of extreme cleanliness and correct diet.

uation, that retardations are greatly influenced by the toxic effect produced by numerous bacteria in unclean mouths and in devitalized, diseased teeth. It is further conceded that tooth ache is, directly or indirectly, the cause of 80 per cent of absence from school in the third, fourth, and fifth grades.

The forms of communicable diseases, where mouth hygiene could play an important part for prevention, are those which involve the respiratory tract, or find ingress to the body through the mucous membrane lining the mouth, throat and nares. The resistance to bacterial invasion may not be determined entirely by the contents of the blood, but by the tone and resistance of the cells of the individual tissue on which bacteria may lodge temporarily. One bacterium does not produce a disease. It is only when the environment proves favorable for their propagation and the production of large numbers, that infection occurs.

Any continuous effort that has for its object the removal of dead animal and vegetable matter, such as food debris, from all the surfaces of all the teeth, the stimulating and keeping up the tone of the membrane lining the mouth, and the reducing of the numbers of bacteria in the mouth to a minimum, must act as a powerful preventive by aiding the tonsils, the soft palate and the pharynx to maintain a normal and healthful condition.

Conversely, those mouths which are neglected and contain decayed teeth with decomposing food, red and congested gums, enlarged tonsils and a palate and pharynx covered by an irritated and partly congested mucous membrane, present an ideal field for the lodgement and incubation of the pathogens. How many of the communicable diseases, that gain ingress through the mouth will finally be eliminated from child life in our public schools by an enforced system of mouth hygiene, is still a question, but all evidence seems to show that a clean mouth with sound teeth is the one most important factor for prevention.

Up to a short time ago we had no tangible records in the department of Health that pertained to communicable diseases in the children of our public schools whereby comparisons could be made from year to year of an increase or decrease in the numbers of these diseases. It is, therefore, impossible at the present time to show what obtained in the schools four or five years ago in comparison with what obtains today.

Out of the death rates from all causes in this city we have been able to find records of three diseases which

are so common among children, namely, diphtheria, measles, and scarlet fever. These are figured on a basis of per 100,000 population, and show the following:

	Year	Deaths	Death rate per 100,000
Diphtheria	1914	41	36.6
	1918	32	18.7
Measles	1911	24	20
	1918	7	4.1
Scarlet fever	1914	17	14.1
	1918	1	0.5

From the death rate tables, the general inference must be that the percentage of communicable diseases is gradually decreasing. Mouth hygiene is a very powerful factor in the restriction of communicable and infectious diseases of childhood.

Our experience has been that greater and more definite results can be obtained for the physical betterment of a larger number of children in an educational and preventive clinic than in a relief and repair clinic, though, of course, ideal service demands correlation of both services.

## THE RURAL SCHOOLHOUSE

A MOST interesting book was recently issued by Jonathan H. Wagner, State Superintendent of Public Instruction, Santa Fe, N. M., called, "Plans and Suggestions for Rural School Buildings."

John Ruskin once said, "We have two great branches of architectural virtue, and we require of any building: (1) That it *act well*, and do the things it was intended to do in the best way; and (2) that it *look well*, and please us by its presence, whatever it has to do. Undoubtedly schools being built in New Mexico will *act well* if the plans of the State Department are followed, as many valuable suggestions are given in the pamphlet concerning (1) The value of school grounds, (2) the building, (3) ventilation, and (4) lighting, equipment, and arrangement. That they will *look well* cannot be questioned by any one who looks at the plans submitted by Mr. Wagner, or by any one who has traveled in New Mexico and has seen the attractive mission type of architecture so popular there.

Public health nurses who are doing rural school work would be wise to avail themselves of copies of this pamphlet which would give them excellent ideas of proper construction of rural school buildings, information which they are much in need of, not only in their sanitary inspection of school buildings, but in their recommendations for improvements to the boards of trustees of offending school buildings. Some of the subjects covered in the pamphlet are summarized as follows:

### Standards for Rural Schools

I. *The School Grounds*.—Beautiful, well kept school grounds are an indication of a progressive community; the money invested in school property brings returns in enhanced farm values and in a happier, richer life for children as well as adults. The schoolhouse should be located on the best plot of ground to be secured in the district provided that it is not too far from the center of the community and has the advantage of the best roads. The fact that the district has a site is no reason why it should not be changed if a better one is obtainable.

The grounds, which should contain at least two acres, must be well drained; must contain water supply, if possible; and should provide for school gardening if older children are expected to attend school. Hence a rocky, wind-swept bit of land which is of no use for anything else will not be a satisfactory school location. Care must also be taken in the mountainous sections lest hillsides or trees shut out the light supply. The building should be far enough away from the road to avoid the dust and noise from passing vehicles.

The grounds should be entirely enclosed by a fence, a practical one being made with several strands of barbed wire or with a strip of hog wire topped with two strands of barbed wire. If the posts are painted white the fence will look well and be more durable.

One of the most important features of any school is its playground. We have changed the old idea of providing separate playgrounds for boys and girls for several reasons. Girls and boys must study together, compete with one another for school honors, go to and from school together, and they are associated with one another in the home. Then, why should they be partitioned off on the playground where there is excellent opportunity for the development of team work, respect for one another's rights, and wholesome, natural relationships between boys and girls? This latter fact is too often sadly neglected as countless errors in later youth give evidence.

There is practically no difference in the play interest of boys and girls, age being the important factor which determines variation in play. There should be a large, general playground so planned that a baseball diamond and a basket ball court can be laid out. A place is reserved for the smaller children and is provided with a sand pile and some small wooden boxes for building playhouses, in addition to such equipment as a giant stride and a slide. The older children may provide other play equipment for the little ones.

II. *The Building*.—No school building should be hastily planned, for in most cases it must serve many years and is likely to become quite inadequate for the community's needs. Each school will have different needs in such matters as size of library, amount of blackboard, and so forth; but no school should neglect such conveniences as built-in cupboards, ample cloak room space, place for dinner boxes, and bulletin board. The coat rooms are especially convenient when provided with a separate compartment for each child.

The classrooms should provide eighteen square feet of floor space for each child. In the matter of general plans consider (1) the number of teachers, grades, and children; (2) the use by community, the needs of the children coming first; and (3) general durability. Convenience and hygienic principles should never be sacrificed for architectural symmetry and fanciful plans. In this category must be included long eaves over windows which exclude light and cast shadows. The plans should include provision for such conveniences as built-in cupboards and bookcases. The room should be no more than twelve feet high and no more than twenty-four feet wide.

### Sanitary Construction Important

Recommendation is made by Mr. Wagner that all public school buildings be so constructed as to conform to the following sanitary requirements:

(1) All buildings shall be weather tight, free from crevices in the floors and walls, and from leaks in the roof.

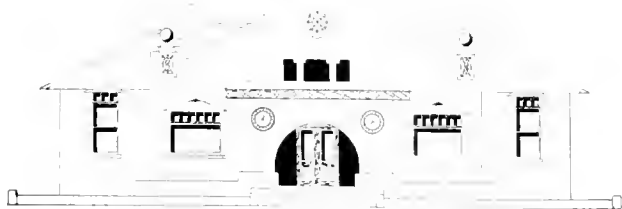
(2) All buildings shall be as nearly fireproof as possible and, if of more than one story, shall be provided with at least one fire escape for each and every corridor or hall



above the ground floor. It is recommended also that all buildings of more than one story be protected with a sprinkling system meeting the minimum requirements of the National Board of Fire Underwriters.

(3) All doors shall open outward only, and all outside doors shall be provided, in schools having more than one room, with fire-bolts on the inside.

(4) All basements or cellars shall be so constructed as to be well ventilated and dry.



The adobe school buildings recommended for New Mexico embody the best traditions of the Mission style.

(5) All future construction shall provide adequate cloak room space, including facilities for the care of wraps, hats, and other personal effects.

III. *The Foundation*.—(1) It is necessary to have one which is firm, to avoid sagging of building or racking it in strong winds, and also to help in keeping dry and warm. (2) Where no basement is finished off, eighteen inches to two feet is of sufficient height. With a basement the foundation should be at least three feet above the ground line. Additional light may be given to basement rooms by terracing the ground.

IV. *Drainage*.—All public school buildings and grounds shall be located on well drained sites. If the natural drainage is insufficient, adequate artificial drainage shall be provided sufficient to insure freedom from dampness of buildings and grounds.

V. *Ventilation*.—(1) Provision should be made for admission of warm fresh air and extraction of foul air—both entrance and exit to be on same side of room, fresh air six or seven feet from floor, foul air near floor. (2) If a jacketed stove is used, it is best placed on the west side of the building because the winds are so often from that direction. (3) Where possible, a furnace should be installed for all with the possible exception of the one-room building. (4) Class rooms shall at all times when occupied be adequately ventilated through one of the following arrangements:

- (a) Through wide open windows in mild weather.
- (b) Through window-board ventilators under other conditions, or
- (c) Through special air ducts, inlets or outlets in connection with an adequate steam, hot water or hot air heating and ventilating system.

(d) When a jacketed stove is used for heating, the jacket shall be fitted with a direct air inlet not less than twelve inches square, opening through the wall of the building against the middle, or hottest part, of the stove, and a special foul air outlet shall be provided in the baseboard on the same side of the room as the stove is located.

### Illumination of Prime Importance

VI. *Lighting*.—The window space in the class rooms should be on the left side only of the pupils and should equal from one-fifth to one-fourth of the floor space. Windows in the back of the room are unnecessary and they inconvenience the teacher, who must face them. The win-

dows should extend to at least within six inches of the ceiling to three and one-half feet from the floor; to the back of the room and to within about seven feet of the front of the room. This last distance depends upon the placing of the seats; as a rule, the window farthest front will not be ahead of the front desk, thus avoiding, as much as possible, light in the face of the children. If the width of a school room is more than twice its height, the desks farthest from the window will be inadequately lighted. No room will be properly lighted if the upper half of the window is continually covered by a shade. Shades need be used only to keep out direct rays of sun light and since the folding, adjustable shades are so easily managed, no school room need be dimly lighted if the windows face east or west. If southern exposure is unavoidable, shades which permit a different light are desirable.

The tinting of the walls makes considerable difference in the brightness of a room, light buff for the walls, and a light cream color for the ceiling. The furniture and woodwork should be of light colored wood and should never be highly polished.

The location of the windows in other than class rooms is not important, the main essential being that there are plenty of them for the admission of sunshine. The requirements for windows, then, are: (1) They should be placed (a) 3½ feet to 4 feet from the floor; (b) as near the ceiling as possible; (c) from five to seven feet from front of room; and (d) banked as closely together as possible.

(2) Window space should equal one-fifth to one-fourth of floor space.

(3) Glass doors in rooms to light hallways are permissible.

(4) Windows may be built in wall of one room to light another. Every class room shall be provided with lighting facilities which will permit adequate illumination of all parts of the room on the darkest days. Window shades shall be provided for all windows in class rooms for the proper control of lighting and the protection of the eyes



A building of this type can easily incorporate such features as will make the schoolhouse a community center.

from a glare of light, and such shades shall permit adjustment from either the top or the bottom.

No trees, shrubbery, or other obstruction shall be permitted so near any school building as materially to impair the natural lighting of any class room.

VII. *Equipment and Arrangement*.—All equipment from blackboards to library tables should be furnished for the small as well as the larger children. Too often all the blackboards are beyond the reach of the little ones, there is no little reading table in the library which they may claim, nor are there any other provisions made especially for their comfort.

(1) Blackboard in front of the room is essential in all classrooms. It should extend all the way across the room in a rural school because of the extended use to be made of it. The board at the side, between the windows and the front wall, should be twenty-eight inches wide or may be width of other in the room and a chalk rail from but twenty-four to twenty-six inches from floor—this to be for use of young children. Space may be provided

above this board for posters, etc. The board on the opposite side of the room may correspond to this. Then the board in the front and back of the room may be regular height from floor.

(2) All school desks used in any class rooms shall be of adjustable type; or, in lieu thereof, desks of different sizes shall be provided to accommodate children of varying growth.

VIII. *Coat Rooms*.—(1) Lighted, ventilated, and large enough for winter wraps, with (2) hooks adjusted to accommodate small and large pupils.

IX. *Lavatory*.—Every public school building shall be supplied where possible with an adequate supply of safe, clean, running water for washing purposes, and provided with sufficient lavatory equipment and supplies, placed, if possible, in a separate lavatory room, which is convenient and accessible.

No towel which is, or may be, used in common by more than one person, without thorough laundering after each individual use thereof, shall be provided or permitted in any public school building. A supply of individual sanitary towels may be provided, or pupils may provide their own towels for individual use.

X. *Heating*.—Unless an adequate steam, hot water or hot air heating system is installed in the school building, at least a jacketed stove shall be provided in each class room.

No unjacketed stove shall be permitted in any class room.

Every class room shall be provided with a thermometer, and the temperature of the air, when artificial heating is necessary, shall at all times, when such room is occupied, be kept at not less than sixty-five nor more than seventy degrees Fahrenheit.

### Sanitary Provisions

XI. *Drinking Water*.—There shall be provided in every school building at all times when such building is occupied, a supply of safe, potable drinking water, ample in quantity for the normal needs of every school child. Every public school building shall be provided with not less than one sanitary drinking fountain of a type that will not at any time permit the mouth of the individual using the fountain to come in contact with the spout or faucet from which the water flows; or, in lieu thereof, a closed sanitary jar, tank or cooler, with a faucet shall be provided. No bucket or other open container for drinking water shall be used.

XII. *Sewage Disposal*.—All public school buildings, where a sufficient supply of water piped under pressure is available, shall be provided with a water-carriage plumbing.

Where there is water-carriage plumbing, separate toilets for girls and boys shall be provided, located, if practicable, in the school building. Such toilets shall be connected, for disposal of the sewage, with a sewer system approved by the State Commissioner of Health, or with a sewage disposal system built in accordance with general plans approved by said Commissioner.

Where there is no water-carriage plumbing, separate privies for girls and boys shall be provided. Such privies shall be well ventilated, rain proof and fireproof, and shall be constructed in accordance with general plans approved by the State Commissioner of Health.

XIII. *Cleanliness*.—School buildings, privies, and grounds shall at all times be kept in a clean and sanitary condition. Class rooms and halls, cloak rooms, toilet rooms, and lavatories shall be cleaned at least once each day.

Floor and furniture shall be cleaned, as far as possible, with dampened or oiled cloths or sweepers, or by vacuum cleaners.

No class room shall be swept while such class room is occupied.

No person shall spit upon the floor or walls of any public school building, nor shall any person throw any waste matter upon the floors or grounds of such building.



Though conforming to a general standard of service as well as artistic value, the model buildings may easily be adapted to different locations.

Suitable, adequate sanitary receptacles for waste matter shall be provided in convenient places.

Whenever any public school building shall be put to any use other than for school purposes, such building so used shall immediately thereafter and before being used for school purposes again, be thoroughly cleaned.

XIV. *Miscellaneous* requirements are summarized under the following heads:

(1) Doors from rooms should open into corridors.

(2) Light into a class room comes from these directions, in order of desirability: Southwest, West, South, East, Southeast.

(3) In cold climate walls may be made double with air space between; and with waterproofed paper between for the outer walls.

(4) Basement rooms which are used for classes or meetings of any sort should not be more than three feet below the ground level.

(5) Eighteen square feet of floor space per pupil minimum for class room.

(6) There should be no thresholds in the building.

(7) An auditorium should be provided where possible. If furnace is placed at one end then there should be room for this purpose in the basement for a large room in the school of three- and four-teacher type.

(8) Separate playgrounds for boys and girls undesirable, except that some schools may provide athletic field; even this is not to be forbidden to the girls.

### DETROIT USES SHICK TEST

It has been announced by the department of health of Detroit that in the last few months the Shick test has been given to more than two thousand school children and protective treatment with toxin-antitoxin to about eight hundred. Materials for diphtheria prophylaxis will be supplied to physicians by the Board of Health, and the Department will give any desired assistance in regard to technic. It is expected that with the extension of this protective treatment a material reduction in the incidence of diphtheria in Detroit may be looked for within the next two years.

If liberty were used exclusively to do wrong, it would be intolerable, and good sense would sweep it from the earth. The supposition on which liberty is based, the condition on which it exists, is that men will use it for right more than wrong; that in the long run they will do right more often and do more that is good, than under a system of restraint.—Abbott Lawrence Lowell.

## THERE IS "AN EQUAL CHANCE FOR ALL" AT NEENAH, WISCONSIN

NEENAH, Wis., is a town of only a little more than five thousand population, but they believe up there that it is "better to prepare and prevent, than to repair and repent," so they are doing all in their power to take care of those little frail children, who, ordinarily, in our small towns and cities sit in stuffy, crowded school rooms, and each spring leave school a little paler, a little thinner, until at about eighteen years of age, if not before, their names became a matter of record in a large book kept in the County Court house. The Public Health Nurse frequently spends hours going through these big books and tries in every possible way to tell the people that it is criminal to allow hundreds of young men and women to die just because law compels them to go to schools unfit for them while they are physically below par.

Many school nurses are justly proud of the open air schools and the fresh air camps that are springing into being as a result of their appeals and earnest efforts to lessen the death toll in their communities.

Miss Sallie Connor of Neenah writes concerning Neenah's new Open Air School:

We are, indeed, very happy to have been able to get this school started last March even though the Board of Education said it looked doubtful because it had not been provided for in the budget. When the matter seemed so urgent that it was stated that with their permission we would go out and get the money and also the room some place, they straightway made some provision whereby it could be taken care of solely within the Board and we secured a large, sunny, airy room on the third floor of the city hall which accommodates twenty lovely couches and twenty special desks, with room to spare for play without moving either desks or cots. The slightly elevated stage serves as a dining room, and the small dressing room at the side for a kitchenette. Our junior high school girls are given a half credit in the Domestic Science Department for taking care of the diet of these children. The students are

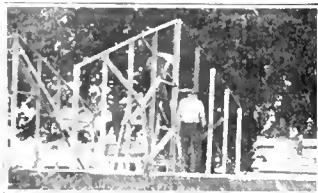
intensely interested in the progress the Fresh Air School children make in weight and strength.

Neenah also has a Fresh Air Camp. The project of the erection of a permanent fresh air camp was presented to the Neenah Civic Association by one of its public spirited men, permanently to provide for these children who had formerly been cared for in any available vacant farm

house. All members of the Association voted to help with building and equipping the camp. The building was made in sections in less than three weeks at the plant of the Hardwood Products Company by volunteer labor. The plant also gave their men who cared to do it, several half days time to work on building.

All materials for building were donated by merchants, manufacturers, and individuals. Trucks were donated to haul sections of building to the camp site, where the building was completely erected by all volunteers in six hours.

The running expenses of the camp are financed by an appropriation made each year by the City Council. The cost is less than five dollars per week per child exclusive of the salary of the nurse. The camp accommodates fourteen children. The children live at camp during vacation and are most happy and contented. They are under the constant supervision of the school nurse. The children rest every afternoon from one to three o'clock. Temperatures are taken every other day, all children are weighed once a week. They make remarkable gains in weight and muscle tone, and they have light, suitable gymnastics each day. It is to such fundamental training and education as this that we may look for the prevention of the breaking under strain and stress which marks our population today. The health and vigor of the race are in our keeping, and education must be planned with due consideration for physical as well as mental training.



Speed marked the willing task of erecting this fresh air camp.



At six o'clock in the morning volunteer workers were on the job.



Sections fitted together beforehand go up in rapid succession.



The camp stood complete by noon of the same day.



Men who worked after hours and on Sunday to build this fresh air camp for sick children.



The children live at the camp on the shore of beautiful Lake Winnebago, two and one-half miles from Neenah.

## THE PERILS OF HEALTH

If what Gilbert K. Chesterton said in his lecture at Jordan Hall, Boston, on January 15, as reported by the *Boston Transcript*, is to be taken without reservation, it might appear that he is opposed to all governmental activity for the protection of public health. Fortunately, Mr. Chesterton gave the assurance that he does not criticize really scientific hygienic investigation. The attention of the world is too largely centered on health, he said. To think overmuch of health is unhealthy. To think rationally of disease is healthy. The glory and satisfaction of health are that the more we possess it, the more we can forget that we possess it.

He cast a volley of ridicule upon the doctor as a health adviser. For doctors he has profound respect, but they are to be called upon extraordinary occasions to deal with abnormal situations, and are not to be constituted as advisers of the community. The modern idea, said Mr. Chesterton, seems to be that, instead of being called to set a broken leg, for instance, the doctor is presumed to take charge of unbroken legs, to say when they are to be used to walk, and when to dance.

God knows why a Ministry of Health, said he, is messing its way into English politics.

Expressing his appreciation of scientific hygienic investigation, the lecturer said that the worship of health was being carried to fantastic extremes. His remarks were to be understood as applying to those who would arbitrarily impose on the people rules of conduct based upon theories of a kind concerning which he had been informed the medical profession changed its mind on an average once in six years.

## MEDICINE AND INDUSTRY

The annual report of the Medical Research Council which has just appeared points out that the problems of industrial medicine are not easily separable from those of public health in general; the overwhelming majority of the people are engaged in industry, and the greater part of prevalent disease is connected either in its origin or extent with industrial occupations and the conditions of life which have been imposed during industrial development. As the matters set out in this report are of equal importance to people everywhere who are interested in the promotion of industrial health, we quote at length from the *Lancet* of January 8, 1921, whose editorial comment stated:

When, in the middle of the year's work under review, the Medical Research Committee was reconstituted as the Medical Research Council, it entered thereby into relationship with the needs of other state departments without loss of direct touch with the Ministry of Health; it came to form a constitutional nexus of a novel kind between the scientific forces of the country and the State. It would be hardly fair yet to look for results from the drawing together of this fine mesh; research is necessarily limited by the supply of well trained men of ability available to do it. But fortunately in the field of industrial medicine it has not been hard to find eager minds, and the Industrial Fatigue Research Board, as to one-half of which the Medical Research Council is responsible, has made investigations in the iron and steel trade, the cotton trade, the boot and shoe trade, the silk trade, and laundry work—the task of the Board being to combine these investigations into a concerted scheme. Great issues of health and happiness to the human race are inherent in this task, which should make an economic return altogether incommensurable with its small cost.

The outlook for industrial medicine is full of promise. Although medical service in the factories and mines of this country, when compared with the United States, is de-

veloping somewhat slowly—due possibly to the long overdue remodelling of the office of certifying factory surgeon—nevertheless important steps are being taken. The labor world, without waiting for legislation, is busy profoundly modifying hours of work; the forty-eight hour week has come to stay; work in factories before breakfast has almost entirely ceased, with a suddenness no one could have foretold a few months ago—soon it will become merely a subject of antiquarian interest. An Act has been placed on the statute book permitting machinery tended by women and young persons to run for sixteen hours daily, from 6 a. m. to 10 p. m., so long as no protected person is employed for more than eight hours a day; the effect of this Act upon the elasticity of employment and of production may be far reaching. Full advantage is being taken of powers conferred by Section 7, Police, Factories, etc. (Miscellaneous) Act, to make orders concerned with the provision of welfare accommodation in many industries; these orders relate to drinking water, first aid stations, seats, cloak rooms, meal rooms, and rest rooms; in practice they simultaneously call into existence welfare supervision, and cannot fail to exert widespread influence upon the health of industrial workers.

The inspectorial staff of the Factory Department are being reorganized to deal with their new responsibilities, and the medical strength is being increased, notably by the appointment of a woman doctor. These officers have even further duties to anticipate, since a new Act consolidating legislation passed since 1901, when the last main Act was passed, may shortly be expected. Further legislation restricting the use of lead in paints may ere long be introduced in order to deal a last blow at plumbism, which would thenceforth become a medical curiosity.

Meanwhile, the Industrial Fatigue Research Board is settling down to its work, and, as the results of careful investigation, is publishing reports setting forth knowledge of practical value to industry and gradually revealing the laws which guide the working of the human machine. Employers reading these reports must be struck with the way in which the same ends serve the interests of productivity and of health. A new science, the science of activity and health, is here rapidly developing.

The Mines Regulations Acts have received fresh inspiration from transference to the Ministry of Mines under a special department devoted to safety and health; while an expert committee of the Medical Research Council is giving close attention to that distressing and increasingly prevalent disease, miners' nystagmus. The first great scheme under the Workmen's Compensation (Silicosis) Act, 1918, has been established; it only applies to a small but important industry, the refractories industry, which includes ganister mining; but it may well be the forerunner of more extended schemes dealing with the grinding of metals on sandstone wheels, the potteries, stonemasonry, and other industries with exposure to inhalation of silica dust. Kindred work going on in South Africa on the gold fields cannot fail, as it throws light on the etiology and prevention of silicosis, to influence in this country schemes drawn up under this Act. All in all, medicine and industry are running well in harness.

## JUVENILE EMPLOYMENT IN ENGLAND

A new education act in England will completely change the whole position of juvenile employment in that country. This act provides that children under the age of twelve years shall not be employed; that children under fourteen shall not be employed in street trading; and that children over fourteen shall not be employed on Sundays, on school days before the close of school hours, or on any day before 6 a. m., and after 8 p. m. Regulations are issued governing the duties of school medical officers which should enable them fully to protect the interests of the child who is employed. Sir George Newsholme, chief medical officer to the Board of Education, in his report just issued, recommends cooperation between industrial bodies, local educational authorities, sanitary authorities, the certifying factory surgeon, and employers. It would be possible to discover what work the child is capable of doing and under what conditions he may be expected to labor without exhaustion or other physical detriment.

# PROBLEMS IN SOCIAL MEDICINE

## Medical and Health Education, Child Welfare, Social Insurance, Rehabilitation, Medical Law and Allied Subjects

JOHN A. LAPP, LL.D., *Editor*

### FIGHTING TUBERCULOSIS IN FRANCE

AN EXAMPLE of the extension of a health campaign among a limited group of people, such as ex-soldiers, to include the entire civilian population of a country can be found in the present anti-tuberculosis program in France. Early in the war representatives of the Rockefeller Foundation sent to France brought back alarming reports as to the wholesale manifestation of clinical tuberculosis in the French army and, while the estimates given out at the time were later found to be exaggerated, yet the absence of any organized blockade against the inroads of the disease was clearly brought home to the country.

The tuberculosis mortality in France is estimated at between 12,000 and 15,000 deaths annually. Almost 110,000 soldiers were invalided from the army through tuberculosis, and these men were cared for at *stations sanitaires* and *hôpitaux sanitaires*. On leaving the *stations sanitaires* to return to their homes, these men were cared for by the departmental or district committees for the relief of tuberculous discharged soldiers.

The machinery and activities developed by these committees to care for the discharged soldier formed the basis for the present anti-tuberculosis program in France. These committees operated under private auspices though they were organized according to a plan laid down by the government and received government subsidies.

The anti-tuberculosis program in France as outlined by Bernard,<sup>1</sup> includes sanatoriums for curable cases, tuberculosis hospitals for the advanced cases, dispensaries for the examination and classification of patients, visiting nurses for follow-up work in the home, and boarding out of children exposed to open tuberculosis, and a general educational campaign. About two hundred dispensaries have been established in the various departments, schools for the recruiting and training of visiting nurses have been opened and eleven new sanatoria organized, making several thousand sanatorium beds available in the country.

The *stations sanitaires* and *hôpitaux sanitaires* will become civilian institutions, and the Pension Law of March 31, 1919, provides for the treatment of diseased soldiers in civilian institutions, the expense of the treatment to be refunded by the state.

Some observations by Bernard on the place of the sanatorium in the tuberculosis campaign are of interest. Since it is impossible, for financial and psychological reasons, to hospitalize all tuberculous patients, "the sana-

torium is only a partial and uncertain solution of the problem of tuberculosis . . . often, indeed, it becomes merely a school of idleness, without even the advantages as regards the general public of permanent segregation. It would be quite different if it became a school of vocational education for the tuberculous who, while undergoing treatment, might be taught trades suitable to their conditions, and directly or indirectly supplied with the means of obtaining employment."

The present tuberculosis machinery in France is only one link in the chain for controlling the disease. The social prophylaxis of the disease must include "the institution of appropriate protective measures, radical changes in housing conditions, a campaign against alcoholism, and the education of children in the matters of health."

JULES SCHEVITZ.

### HEREDITY AND ENVIRONMENT IN TUBERCULOSIS

"OUT of an equally infected group of individuals equally in close contact with active and open tuberculosis, and living under identical environmental conditions, some individuals in the group develop clinically active tuberculosis while others never do. What is the reason for the differentiation?"

The above problem stated by Pearl<sup>1</sup> is the crux of the whole matter of the etiology of tuberculosis, a problem which many, unfortunately, have considered solved, but which still requires most exhaustive experimentation and discussion in order that the tuberculosis program can be carried on along logical lines.

It is only too often the case that tuberculosis workers allow sentiment and prejudice to sway them in the determination of a program for the control of tuberculosis. Facts based on careful research and observation should govern our activities, and not well sounding and popular opinions which have been spread broadcast among health workers in the guise of true statements of facts.

The studies made by Pearl, Pearson, and others indicate very clearly that the factor of heredity in the development of tuberculosis, which has hitherto been minimized by most workers, is of real significance in the consideration of the problem. The incidence and intensity of the influenza epidemic of 1918, for example, were not satisfactorily explained by geographical, sanitary, and other en-

1. Bernard, Leon: The War and the Social Prophylaxis of Tuberculosis, Internat. J. Pub. Health, 1920, i. No. 3, p. 287.

1. Pearl, R.: Relative Influence of the Constitutional Factor in the Etiology of Tuberculosis, Am. Rev. of Tuberculosis, iv. No. 9, p. 688.

vironmental considerations alone, according to careful compilations prepared by Pearl.

"It is altogether improbable that either environment or hereditary constitution alone determines the differential incidence of active tuberculosis. It is much more likely that both factors are involved." What we need is a quantitative determination of the relative importance of each in the etiology of tuberculosis.

Krause,<sup>2</sup> while emphasizing the part of environment in its broadest conception, including habits, psychic condition, and other diseases, admits the inadequacy of scientific data with respect to the proof of his contentions. His frankness regarding the absence of conclusive evidence equals that of Pearl, whose reports stress the constitutional factors in the etiology of disease. The attitude of workers such as these, men who seek the truth, whatever it may reveal, is responsible for the shedding of additional light and knowledge on this perplexing problem.

The evidence presented by Pearl indicating the part of heredity in the etiology of tuberculosis is based on direct evidence as to the inheritance of tuberculous diathesis, evidence from the natural history of the disease and that from differential racial incidence in the same environment. In a table showing the frequency of the occurrence of tuberculosis among the blood relatives of tuberculous persons and non-tuberculous persons it is found that, taking all the generations together, a tuberculous person has 7 per cent of his or her blood relatives tuberculous, whereas a non-tuberculous person, chosen at random, has only 1.2 per cent of his or her blood relatives tuberculous, the absolute numbers involved in the two samples being approximately the same.

When the duration and extent of personal contact of these individuals with persons in an active "open" tuberculous condition is analyzed, it is found that there is a close relation between the proportion of tuberculous offspring and the percentage of close contact; in other words, the person who is exposed to open tuberculosis has greater chance for developing clinically active tuberculosis than one who is not so exposed, indicating that familial contact is beyond question a factor in determining the incidence rate of clinically active tuberculosis. The figures usually show "that when one or both parents were actively tuberculous, virtually three-fourths of the non-tuberculous offspring have been in just as close contact with active, open cases as their brothers and sisters who unfortunately developed the disease."

It has been commonly observed that the pioneer stock in newly settled communities, as in Western Canada, made up of people with vigorous constitutions, have low tuberculosis death rates, and that as conditions become more settled, making living in the new community less hazardous, there is an influx of weaker stocks, followed by an increase in the tuberculosis death rate. The great differences in tuberculosis mortality of different racial stocks have been carefully analyzed by Dublin and Baker<sup>3</sup> and in these cases the people were living in the same general environment. This evidence also indicates the part of the constitutional factor in the etiology of tuberculosis.

The following significant remark by Pearl will have to be admitted by all scientists engaged in tuberculosis research: "The plain fact is that we are densely ignorant of the relative influence of the several factors which may

be concerned in the etiology of tuberculosis." Every assistance should be given those engaged in the working out of this important problem.

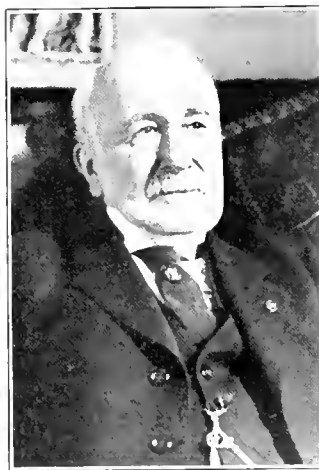
JULES SCHEVITZ.

## NEW HEALTH BULLETIN

"COMMUNITY HEALTH" is the name of an attractive bulletin published by the Charleston County, South Carolina Health Department. The *Bulletin* contains several interesting illustrated articles dealing with the nature and spread of communicable diseases, also reports of the educational and sanitary work carried on by the health department. A special section of the little journal is devoted to rural sanitary problems, including clean drinking water, housing, and disposal of human excreta. Dr. Leon Banov is the full time health officer of the County.

## DR. KEEN HONORED

On the occasion of his eighty-fifth birthday celebration



International.

a testimonial dinner was given January 20, 1921, in the Bellevue Stratford Hotel, Philadelphia, which was attended by many representative physicians and surgeons. A life size bronze bust of Dr. Keen by Samuel Murray was presented to him on behalf of the medical, civic, and other organizations of many cities. Dr. Keen has served in three wars as medical officer. For his services during the World War he was honored with the Belgian Order of the Crown conferred upon him by King Albert. Though in his

eighty-fourth year, he went to Europe last fall to preside over the International Congress of Physicians and Surgeons in Paris.

## NURSING SCHEME IN MANCHESTER

At a meeting held in the Manchester Town Hall November 29, 1920, 130 members of approved societies initiated a nursing scheme with a view to supplying nurses for the public health office and of meeting any calls from the Insurance Committee and from the approved societies for the nursing of insured persons. The scheme involved a small contribution by each insured person, the aggregate of which would enable the staff of nurses to be adequately increased and properly paid. The extension entitles a doctor attending an insured person to call for a fully qualified nurse to look after the case.

## TO THE SCHOOL NURSE

Questions to ask yourself about each child under your care: (1) Does he breathe well? (2) Are his teeth in good condition? (3) Is he too pale? (4) Has he a persistent cough? (5) Has he a running nose or running at the ears? (6) Has he any skin trouble? (7) Has he any swelling about the neck? (8) Are his sight and hearing normal? (9) What is being done to interest him in forming good health habits?

This guide is taken from "Health Education in Rural Schools," by J. Mace Andress.

2. Krause, A. K.: Environmental Factors in Tuberculosis, *Am. Rev. of Tuberculosis*, iv, No. 9, p. 713.

3. Dublin, L. I., and Baker, G. W.: Mortality of Race Stocks in Pennsylvania and New York, 1910, *Quart. Publication Statistical Association*, 1920, xvii, No. 13.



# PHYSICAL AND MENTAL EXAMINATION OF AMERICAN SOLDIERS

By ARTHUR MACDONALD, ANTHROPOLOGIST, WASHINGTON, D. C.

THE initial selective draft of 1917 furnished a good opportunity to estimate the physical condition of the male population of our country. Out of about ten million males registered, from twenty-one to thirty years of age, there were measured and examined physically, at local boards, about two and one-half million men, of whom about seven hundred thousand, or 29 per cent, were registered on physical grounds. Subsequently 3,208,446 men were examined by local boards up to September 11, 1918. Out of these two groups during the period down to May, 1918, about one million men were sent to mobilization camps, and their physical defects were recorded. It is the defects of these first million recruits which we desire to study, based upon the report of the Surgeon General of the Army.<sup>1</sup>

The conclusions from the results of examination of the first million recruits, though tentative, probably indicate general truths. The severity of the physical examinations varied with the different camps, due largely to the various ideals of the examining boards. Facts as to disabilities, though mainly important for military considerations, are not without significance for civil life, for soldiers come from every class and section and are quite representative of the virile male population.

It will be seen from Table I that of the first million men examined 65 per cent were accepted as qualified without defects, 29 per cent as qualified with defect, and 5 per cent rejected.

TABLE I.—MILLION MEN EXAMINED JUNE, 1917, TO MAY, 1918

	Num- ber	Per cent
Men accepted as qualified without defects	643,797	65
Men accepted as qualified with defects	291,875	29
Men accepted with defects for operation	185	1
Men accepted for limited service	2,134	—
Men rejected	52,915	5
Total men examined from each state	994,204	100

## Rejections at the Mobilization Camps

The rejections at camps as a result of physical examinations were as follows:

	Per cent
Imperfections in the sense organs	21
Mechanical defects	20
Circulatory defects and diseases	15
Tuberculosis and venereal diseases	15
Skin and teeth	10
Nervous and mental troubles	9
Developmental defects	6
Other defects	4
	100

## The Handicap for Civil Life

Since in war men must often move on their feet great distances in short times and carry a load of forty pounds or more, it does not follow that, though physically unfit for such service, they are not fit for the duties of civil life. Thus flat foot or hernia may keep a man out of

military service, but may allow him to do his work in civil life well and in good health. The tension and stress in the trenches require strong senses and heart action in a much higher degree than in civil life. Yet nervous and mental disabilities, tuberculosis, and venereal diseases are a handicap in all kinds of life. Taking everything into consideration, it is estimated that about one-half the men rejected for general military service are not seriously hindered from activity in civil life.

## The Men at Mobilization Camps

Table II, Part 1, presents the comparative frequency of various diseases and defects found in mobilization camps in first million draft recruits, giving ratios per one thousand recruits for the entire United States. The defects are arranged in order of their frequency. Flat foot is by far the most common defect, affecting nearly 18 per cent of the total number examined. Venereal and throat diseases are next in frequency to flat foot; but hernia, when inguinal rings are included, will stand second in order in place of venereal disease, which will then be third.

TABLE II.—FIRST MILLION OF UNITED STATES SOLDIERS

Cause of Rejection	Part I.		Part II. Men Rejected	
	Num- ber	Per 1000	Num- ber	Per cent
Flat foot	176,124	177.45	2,496	1
Venereal diseases (all)	28,826	29.99	1,217	4
Throat diseases	24,132	24.28	47	..
Gonorrhea	23,311	23.41	490	2
Inguinal rings	25,156	20.28	—	—
Hernia	13,709	13.79	3,371	25
Vision, all defects	9,220	9.3	6,555	71
Heart, valvular disease	7,157	7.19	5,129	76
Feet, congenital defects	6,994	7.03	604	9
Teeth, D. or loss	4,923	4.96	3,371	67
Tuberculosis (pulmonary)	4,911	4.91	4,519	92
Syphilis (all)	4,459	4.49	1,530	35
Varicose Hemorrhoids and vari- cose veins	3,318	3.31	116	3
Otitis Media	5,771	5.80	801	14
Underweight	2,589	2.60	1,914	74
Ankylosis	2,581	2.60	926	36
Mental defects	2,131	2.45	2,333	85
Fracture (malunion)	2,015	2.02	1,045	51
Goiter (simple)	1,834	1.85	266	15
Testes (congenital defect)	1,882	1.81	302	16
Skin diseases	1,590	1.58	69	1
Varicose veins	1,428	1.41	526	36
Eye (refraction error)	1,408	1.42	743	52
Epilepsy	1,066	1.06	1,028	96
Chancroid	1,056	1.06	107	10
Hemorrhoids	1,025	1.03	159	15
Physical development (defective)	799	0.80	652	82
Scoliosis	713	0.75	409	51
Asthma	622	0.63	552	88
Heart disease (functional)	601	0.61	308	50
Arthritis	595	0.60	419	74
Psychosis	594	0.60	569	95
Hearing, defective	579	0.58	368	63
Heart, hypertrophy dil.	526	0.53	307	58
Nose diseases	521	0.53	85	16
Trachoma	469	0.47	386	82
Nervous disorders (functional)	463	0.46	441	95
Goiter, exophthalmic	446	0.45	409	90
Cardiac Arrhythmia, etc.	396	0.40	308	77
Psychopathic (Constitutional)	309	0.31	297	96
Drug Addicts	286	0.29	270	94
Myocarditis	181	0.18	168	92
Alcoholism (chronic)	94	0.07	70	74

Only 2 per cent of cases of gonorrhea were rejected, while 35 per cent of the syphilitic were discharged. Diseases of the throat show very few discharges,—only 47 out of 24,132 cases.

Heart diseases consisted of 7,157 cases of valvular and

1. Ireland, Love, and Davenport: Physical Examination of the Million Draft Recruits—Methods and Results. War Department, Office of the Surgeon General, Bulletin No. 11, March, 1919. Washington Government Printing Office.

endocardial involvement, 181 cases of myocarditis (see end of table II), and 526 cases of cardiac hypertrophy and cardiac dilation; there are also listed 396 cases of cardiac arrhythmia and tachycardia, making in all 8,260 cases. As will be noted from the table, the valvular diseases constitute the great majority of the cases, of which 5,429, or 76 per cent, were rejected. The detection of valvular disease and endocarditis is considered most difficult in physical examination. While cardiac murmurs are the most certain physical signs of valvular disease, yet they may occur in healthy hearts under excitement and exertion, such accidental murmurs being systolic in time. Also, irregular heart action may be caused by the excessive use of tobacco. Soft systolic murmurs, frequently heard in growing youths, are also functional and temporary in their nature. Usually no murmur was considered organic unless there were secondary physical signs, as cardiac enlargement, edema, or cyanosis. Cardiac arrhythmia and tachycardia, that is, irregular and rapid heart action, are functional (see near end of table); 396 cases were found, of which 308 were rejected.

**Eye defects.**—Diseases of the eye were very common defects, and especially defective vision; refractive errors of the eye, including myopia (short sight), hyperopia (far sight), and astigmatism, included with all other defects, make a total of 9,220 cases.

**Varicose veins.**—Many defects were dependent upon weakness in the walls of the veins, causing varicose veins, varicocele, and hemorrhoids. Adding all these cases, as listed in Table II, there are 5,771 cases, or 5.8 per thousand of men examined. Only 801, or 14 per cent, of these were rejected, showing such defects to be for the great part remediable.

**Otitis media** is a very common cause for rejection, 74 per cent of such cases being rejected.

**Mental deficiency.**—In the physical examination there were found 2,431 cases; 85 per cent were rejected. It is thought additional cases later were detected and rejected as a result of the psychological examination. Major Yerkes, who was at the head of this work, estimates that from 1 to 1½ per cent of recruits who arrived at mobilization camps were subsequently rejected for mental defects which were revealed by special mental tests.

**Defects of the feet.**—Hammer-toe, hollow foot (pes cavus) pronated foot, deformities of foot, and ingrowing nail constitute the other defects of feet, aside from flat foot. These defects are generally caused by misuse or mishandling of the feet. As given in table, there were 6,994 cases, affecting 0.7 of 1 per cent of the men examined. Of these 604, or 8 per cent, were rejected. Attention might be called to the fact that overriding toes, if excessive and numerous, are liable to cause blisters in marching and are cause of rejection. If mild in degree, they may improve after wearing of the army shoe.

**Underweight** is an important cause of rejection, 64 per cent of such cases being rejected.

**Ankylosis.**—Stiff joint, bony and fibrous, caused rejection of 36 per cent (2,584) of the cases found.

**Malunion of Fractures.**—Fifty-one per cent of these cases were rejected, the decision depending upon the degree of malunion.

Congenital defect of the testes occurred in 1,802 cases; 302, or 16 per cent, were rejected.

### Mental and Minor Nervous Diseases

The defects now to be noted belong to mental and minor nervous diseases.

**Exophthalmic goiter.**—Hyperactive secretion from the thyroid gland was found in 446 recruits, of whom 409,

or 90 per cent, were rejected. Simple goiter, or enlargement of the thyroid gland, was much more common, there being 1,834 cases, showing 266, or 15 per cent, rejections.

The physical examination standard required the rejection of all forms of insanity. Cases of emotional instability, as psychoneuroses, hysteria, neurasthenia, etc., numbered 453, 95 per cent of whom were rejected.

**Tuberculosis.**—The rules required the rejection of cases of pulmonary tuberculosis; the difficulty, however, of recognizing dormant cases is well known. There were 4,911 cases of pulmonary tuberculosis discovered, of whom 4,519, or 92 per cent, were rejected.

Some further defects in Table II may be noted, as defective hearing, in which 63 per cent were rejected; skin diseases, in which only 4 per cent were rejected; and scoliosis, or curvature of the spine, of which 51 per cent were rejected. The incidence of dental caries and defective teeth reached the ratio of nearly 5 per thousand men, 67 per cent of whom were rejected.

### Compares Urban and Rural Districts

In the comparison of the incidence of disease and defects in urban and rural districts, about forty-five thousand inhabitants or more constitute an urban district. Districts with less than this were classed as rural.

In Table III are presented, for urban and rural districts, an approximation of the number and per cent of the first

TABLE III.—COMPARISON BETWEEN URBAN AND RURAL DISTRICTS AS TO CAUSES OF REJECTION

	Urban		Rural	
	Num- ber	Per cent	Num- ber	Per cent
Recruits (first million).....	377,020	100.	506,965	100.
Accepted without defect.....	232,787	62.0	338,356	67.0
Accepted with defect.....	126,268	33.0	143,446	28.0
Rejected.....	17,965	5.0	25,163	5.0
Causes of Rejection—				
Pulmonary tuberculosis.....	1,228	0.326	2,388	0.471
Defective vision.....	2,359	0.626	2,430	0.479
Otitis media.....	813	0.216	686	0.135
Mitral insufficiency.....	1,962	0.522	1,623	0.320
Defective or deficient teeth.....	1,159	0.385	1,921	0.379
Hernia.....	1,306	0.346	1,502	0.296
Flat foot.....	910	0.249	1,069	0.211
Underweight.....	707	0.188	768	0.151
Chronic alcoholism.....	13	0.011	20	0.004
Drug addiction.....	118	0.039	43	0.008
Myopia.....	205	0.054	186	0.037
Varicose veins.....	216	0.057	226	0.045
Arthritis.....	107	0.028	201	0.040
Epilepsy.....	258	0.068	449	0.089
Conjunctivitis, granular (trachoma).....	59	0.016	271	0.053
Endocarditis.....	99	0.026	123	0.024
Asthma.....	157	0.042	283	0.056
Skin Diseases (other).....	152	0.040	261	0.051
Pronated feet.....	38	0.010	151	0.030
Defects found in camps.....	114,233	38.25	168,609	33.35

million recruits, accepted without defect, accepted with defect, and rejected. It appears that the relative number rejected was the same for both urban and rural districts, being 5 per cent, but that in the rural districts 5 per cent more were accepted without defect. In the last line of Table III is given total number of defects and the percentage of all defects.

Table III mainly concerns a comparison between urban and rural districts as to rejections. It will be seen that, as to pulmonary tuberculosis, relatively more with this disease come from the rural districts. This is also true of mitral insufficiency, arthritis, epilepsy, trachoma, asthma, skin diseases, and pronated foot. It is thought that the greater amount of epilepsy in rural districts is due to the greater frequency of consanguineous marriages there.

In the other causes for rejection shown in Table III, as defective vision, otitis media, hernia, drug addiction, etc., the urban districts lead. Otitis media appears to be

greatest where population is concentrated, especially in slum areas. Chronic alcoholism and drug addiction are so much greater in the cities that they might be called urban evils.

### Distribution of Defects

From tables not here given the distribution of defects discovered in the mobilization camps may be generally noted. There was a large amount of flat foot in the agricultural zone extending through Illinois, Missouri, Kansas, Nebraska, and Colorado. There is a small amount of flat foot from the southern states, due in part to the negro population, which is normally flat-footed; also a large proportion of the rural male population of the South during early life goes without shoes. With the exception of Maine, hernia is high in the New England States, New York, Ohio, Illinois, and Wisconsin, this preponderance possibly due to the large cities, as urban districts are more disposed to hernia.

Venereal diseases were found very predominant in the southern states, the ratios being affected by the negro recruits. Throat diseases were found to be highly prevalent in Massachusetts, Vermont, and New Jersey. Heart disease with valvular involvement was found especially in recruits from the Great Plains region and the mountainous country of the Northwest, but was least frequent in the central and middle states. Also, cardiac hypertrophy and dilatation were frequent along the Atlantic seaboard, in the New England and middle states, and especially in Virginia and the Carolinas. Defects of vision are especially frequent in New England and New York City, where there is a large foreign population. In New York State much defective vision is traceable to the Polish Jews, who show a large proportion of bad eyes. Varicose veins are found especially in mountainous regions of the extreme Northwest, and in Minnesota and Wisconsin. Hemorrhoids are very frequent in the recruits from the southern states, due to the negro population. Mental deficiency shows greatest incidence in the southern states, due to the negro population. The foot defects are more frequent in the more northern states, which may be due to factors already mentioned; but a large proportion of the youth of the Gulf states are brought up without shoes, which tends to promote the health of the foot. Ankylosis is especially frequent in recruits from the northern tier of western states—Washington, Idaho, Montana, North Dakota, and also Minnesota and Montana.

Underweight is frequent in recruits from Georgia and Alabama, due probably to the hookworm. There is also a high amount in New England, New York, and New Jersey, probably due to the influence of the Mediterranean race and of Polish Jews in those states. Defective physical development and deficient chest measurement are frequent in the southeastern states, probably due to hookworm; in New England, also, these physical defects are prominent, due probably to immigrants of races of short stature; the low incidence of such defects in the Dakotas and other Great Plains states is probably due to the physically larger European races who have settled there.

Goiter is especially frequent in the mountainous states of the north. Tuberculosis is most frequent in recruits from the southern states, due to the negro element; the lowest amount of tuberculosis is found in states adjacent to the Great Lakes and North Dakota.

Tuberculosis (pulmonary), venereal diseases, and valvular heart disease are inversely correlated with the density of population. Defects of vision, including astigmatism, are directly correlated with the size of cities.

Mental engineering, as it has been called, is the great

object of the organized war service of American psychologists, that started in an informal meeting in the spring of 1917, when they asked themselves what they could do to help win the war. The answer to this question has resulted not only in a war measure, but is a permanent contribution to the organization and utilization of human forces. One of the immediate results of this effort is the Army mental tests.<sup>2</sup>

Up to November, 1918, the Army mental tests had been given to 1,726,966 men, of whom 41,000 were officers. More than 7,800 men had been recommended for immediate discharge, 10,014 for labor battalion or other service organizations. Nearly 30 per cent of the 1,566,011 men were found to be unable to read and understand newspapers and write letters home. Approximately 83,000 individual examinations were made.

### Group and Individual Examination

After repeated revisions of methods the procedure finally adopted provided for two types of examination—group and individual—the former to save time, the latter for reliability and fairness to the individual. There were two kinds of group examinations, one for men able to read and write English fairly well, called "Alpha," and the other for persons not able to read and write English well, called "Beta."

The group type of examination for groups numbering up to five hundred consisted of eight tests, as follows:

*Test 1.*—To listen and carry out commands. When "Attention" is called, to stop instantly and hold pencil up.

*Test 2.*—Arithmetical problems. How many are five men and ten men? If you walk five miles an hour for three hours how far do you walk?

*Test 3.*—Practical judgment. Why do we use stoves? Because they look well; they keep us warm; they are black. Here the second answer is the best and is marked with a cross.

*Test 4.*—Synonym and antonym. If the two words of a pair mean the same, or nearly so, draw a line under "same." If they mean two opposite, draw a line under "opposite." If not sure, guess:

good—bad	same—opposite
little—small	same—opposite

*Test 5.*—Disarranged sentences: The words "A eats cow grass" should make a sentence, if arranged in right order: "A cow eats grass," and this statement is true.

Again, the words "Horses feathers have all" should be put in the right order, "All horses have feathers," but this statement is false.

A eats cow grass.....	true—false
Horses feathers have all.....	true—false

*Test 6.*—Number series completion.

2	4	6	8	10	12	14	16
9	8	7	6	5	4	3	2

The test is to look at each row of numbers and on the two dotted lines, write the two numbers that should come next.

*Test 7.*—Analogies.

sky—blue:	grass—table,	green,	warm big
fish—swims:	man, paper,	time,	walks, girl
day, night:	white, red,	black,	clear, pure

In each line the first two words are related in some way. The test is to see what the relation is between the first two words, and underline the word that is related in the same way to the third word.

*Test 8.*—Information. People hear with the eyes, ears, nose, mouth. France is in *Europe*, Asia, Africa, Australia.

The correct word is to be underscored or the word which makes the truest sense.

These examination tests are mainly for illiterates.

2. Yoakum and Yerkes: *Army Medical Tests*. Published with the authorization of the War Department, New York, 1920.

They consist of seven tests: (1) Maze, (2) Cuve analysis, (3) X-O series, (4) Digit symbol, (5) Number checking, (6) Pictorial completion, and (7) Geometrical construction.

This Beta group in effect is (not strictly) the Alpha group translated into pictorial form, so that illiterates or those not familiar with English might have a proper examination. Some of low mentality, of foreign birth, or with peculiarities of behavior, were required to take either two or three examinations.

### Grades of Intelligence

These group examination tests, though influenced some by education and environment, nevertheless measure in the main the native intelligence of the individual. Each group, Alpha and Beta, requires about fifty minutes.

While intelligence is one of the most important factors of military service, moral characteristics are also of great worth, such as reliability, bravery, ability to lead and "carry on." It will be found also in military as well as civil life that individuals with high intelligence are much more liable to stand high in moral characteristics when temptations come than those of lower degrees of intelligence. In these tests the ratings of men are a fairly reliable index of ability to learn, to think quickly and accurately, to analyze a situation, to maintain a state of mental alertness, and to comprehend and follow instructions.

The score depends little or none upon schooling; some of the best records were made by men who had only a grammar school education. They were rated as follows:

- A.—Very superior intelligence, representing only four or five per cent of the draft quota.
- B.—Superior intelligence, attained by eight to ten soldiers out of one hundred.
- C+.—High average intelligence, including from 15 to 18 per cent of all soldiers.
- C.—Average intelligence, representing about 25 per cent of all soldiers.
- C.—Low average intelligence, including about 20 per cent of soldiers.
- D.—Inferior intelligence, being about 15 per cent.
- D and E.—Very inferior intelligence, the majority are below ten years in mental age.\*

### General Psychological Classification

Table IV gives a summary of a general classification based upon psychological examination. Under the second column, "White Draft," is presented a random sampling of the 1,726,000 men examined.

The third column, headed "Recruits," is a small group brought out by sorting. Under "Privates" in column four

is designated a random selection of men reported as being in infantry, artillery, machine gun, etc. The other columns are results of sampling. The group under "Sergeants" includes all classes of sergeants; medical officers are included in percentages given. Further evidence indicates that the tests will be successful in field operations. Table IV indicates a general correspondence between degree of intelligence as shown by mental tests and the actual rank of soldiers in the Army.

### Tests Distinguish Low Grade Men

Men for commissioned officers are found mainly in "A" and "B" classes. As more than one-fourth of enlisted men rate as high as "C," high average intelligence, it is not usually necessary to go below this grade in choosing non-commissioned officers; also, men below are rarely equal to complicated paper work. The Army mental tests help in the prompt recognition of low grade men, which is of great military importance. Men in the disciplinary group, men having difficulties in drill, men called unteachable, and those designated "poorest" by officers show large percentages ranking below the average in psychological examinations. Negroes rank much lower mentally than whites, and southern negroes rank also lower than northern negroes in mentality.

### Mentality Most Important Factor

When soldiers are assigned to training lists without regard to intelligence, extreme inequalities of mental strength of companies and regiments appear, and a very serious result is the risk of weak points in the Army chain. There is also much difference in the intelligence of officers in different arms of the service, where mental tests could render aid. In brief, degree of intelligence is probably the most important single factor in determining a man's value to the military service.

### Tests Applied to Other Fields

The Army mental tests may be used in the admittance of students to college and in the educational guidance of students. The probable error of the score in Army mental tests for literates is five points. The correlation of these tests with other mental tests are as follows with (1) officers' rating of their men is 0.50 to 0.70; (2) Stanford Binet, measurements 0.80 to 0.90; (3) Trabu Band C completion tests combined 0.72; (4) with examination Beta and Stanford Binet 0.94; (5) (a) with school teachers' ratings 0.67 to 0.82, (b) school marks 0.50 to 0.60, (c) school grade location of thirteen and fourteen year old pupils 0.75 to 0.91, (d) age of pupils 0.83.

Mental tests will probably in the future aid in defining racial likenesses and differences.

The relations of illiteracy to insanity, feeble-mindedness, mental deficiency, temporary mental aberrations, immoralities, and prostitution have been studied but little, though their importance is great. In the Army the relation of mental deficiency to the morale may be vital; military crime may have its main cause in mental feebleness. Breaches of discipline may often be explained through mental tests. In a study of the disciplinary barracks cases of desertion were found to correlate positively with low mentality; on the other hand, in a study of conscientious objectors, mental tests showed that they stood above the average in ability.

The mental tests in the Army showed that intelligence increases as we go from unskilled labor to occupations of higher order, especially professional positions.

A student personnel bureau has been proposed to obtain data about each one, to find the main requirement of dif-

TABLE IV.—RELATION OF INTELLIGENCE RATING TO RANK

Score	White Draft	Recruits	Privates	Corporals	Sergeants	2nd Lieut.	1st Lieut.	Captain	Majors	Above Major
1	2	3	4	5	6	7	8	9	10	11
A .....	.....	7.4	9.3	16.1	21.0	59.4	51.7	53.4	61.4	63.6
B .....	4.1	11.1	14.6	26.2	26.5	27.1	29.7	29.0	25.0	25.1
Cx .....	8.0	14.7	21.2	27.5	25.4	10.9	13.8	14.4	9.2	8.9
C .....	15.2	20.7	25.8	19.3	16.8	2.4	3.7	3.8	1.5	2.5
C+ .....	25.0	21.1	16.1	8.7	3.8	0.2	0.5	0.1	0.2	0
D .....	23.8	17.0	15.6	9.7	1.8	1.5	0	0	0.1	0
D- .....	17.0	9.5	3.9	0.6	0.5	0	0	0	0	0
Cases .....	91,004	620	15,647	1,482	1,863	5,590	5,908	3,023	517	159
Perc't Beta	29.7	28.0	14.3	2.7	1.6	0	0	0	0	0

\*That is, below the intelligence of a normal child at ten years of age.

ferent professions and to enable the student, through knowledge of his own abilities, to find that profession or occupation to which he will probably be best adapted, and thus reach his maximum of service and success in his career in life. Some of the results achieved in the Army mental tests are: (1) The Assignment of an intelligence rating to every soldier, based upon systematic examination; (2) finding of men of superior intelligence, indicating the desirability of advancement or special as-

signment; (3) prompt selection for development battalions of men so inferior intellectually as to be unsuited for regular military training; and (4) the early discovery and elimination of men of so inferior intelligence that they cannot be used in any line of military service.

As the mental tests were for immediate assistance and practical purposes, many studies of scientific interest were omitted, though mental appraisal is of basic importance in placing and in conditioning the individual.

## CERTAIN CLINICAL ASPECTS OF THE FRAMINGHAM HEALTH DEMONSTRATION

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THE question is often asked: What is the concrete gain to which the Framingham Demonstration is able to point? This question was asked and answered by a committee of medical and social experts and has been printed in a report of this committee to former Surgeon General Rupert Blue of the United States Public Health Service, under the title of the "Report of the Committee on Appraisal for the Framingham Community Health and Tuberculosis Demonstration," October, 1919.

### Not a Therapeutic Experiment

If the question is asked from the clinician's point of view, namely, treatment, meaning therapeutics, it can be answered very briefly, nothing. Studies in treatment and therapy must necessarily be carried out where there are a large number of patients who as a distinct group can be put under some particular method of treatment; or, when there are sufficient numbers to be divided into groups, where various forms of therapy may be undertaken for comparative study. Framingham has no group of patients segregated; therefore, no therapeutic results must be expected from this work. Those who are looking for the results of tuberculin or "serum" treatment, the value and place of artificial pneumothorax, heliotherapy, actinotherapy, calcium therapy, a discussion of the proper time for rest and exercise, occupational therapy, etc., etc., will have to look for them in the reports of progressively managed sanatoria, and not in the reports of the Framingham Experiment.

The Framingham Demonstration is essentially a medico-social study with an attempt to assist in all moves made by the citizens to better their health conditions and wherever possible to stimulate the people to new measures of tuberculosis control and the health betterment of the town.

In order to bring about these results it was necessary first of all to show how much tuberculosis was present among the inhabitants of the town. This was accomplished by a series of medical drives wherein there were examined in all about three-fourths of all the population of the town. Tuberculosis is a reportable disease, so that the number of cases when found, through whatever source, are then made known to the Board of Health.

The accomplishment of this extensive medical examination was brought about in several ways: First, a sickness census made by the insurance agents and the nurses; this showed 14 new cases; then two drives were instituted in each of which about 2,500 people were examined; later, a large number of men were examined for the draft board. After this came the "flu" epidemic,

which brought in still more, who were examined before they went back to work; and, further, more than two thousand school children were carefully examined by the school physician. Special groups were examined at the baby clinics, in the factories, and in the summer camps, and 460 little children were examined in a tuberculin study. In all, twelve or thirteen thousand persons were examined. The good results obtained from this work were, (1) a knowledge of the amount of tuberculosis in the town, and (2) an education of all the 12,000 persons examined by the calling attention of all these people to the desirability of attending to their health. Even those who were practically well had small defects called to their attention, and were told where to go and what to do in order to remedy the defects.

### Examinations Were Startling

As to the amount of tuberculosis in the community, the results of the examinations were startling. Starting in 1917 with twenty-seven known cases reported by practicing physicians, at the end of the next year this number had increased to 181 cases. About 1 per cent in the group examined appeared as active cases, and another 1 per cent could from the history and the physical findings be recognized as arrested tuberculosis cases.

Here was a result showing a much greater amount of tuberculosis than had been expected. Six to eight active and arrested cases to each death was what had been the usual estimate here in Massachusetts. The number in Framingham jumped to ten active cases to each death, and another group of ten arrested cases dwelling in the community and practically heretofore unrecognized.

The accuracy of the findings of the first group has since been confirmed by cities such as Manchester, N. H., where careful work has disclosed as many as ten active cases to each death. The study of the second group, the arrested cases, to see how they act as a contributing factor to the active cases, has never previously been made. This group of arrested cases has been recognized and warned of the danger and their subsequent life history has been carefully followed.

The development of this extensive survey, with its accurate answer to the question—how much tuberculosis is there in the town?—together with the follow-up work for the care of these tuberculosis cases, has given an answer to a question often asked by legislative committees and persons interested in the economics of the care of the tuberculous: How many beds are required to house the tuberculous sick?

The reply has been made, "one bed to each death is the ideal." In Massachusetts the county hospitals were designed in the first place to provide one bed for every two deaths, but with only a part of the hospitals already designed and constructed, during the past three or four years the number of cases seeking admission has been much smaller than the number of beds already provided. What is the reason? Framingham gives a clear answer. Knowing of the large number of cases of tuberculosis, and with the sufficient machinery for follow-up work, the ideal quota of beds is filled and kept full. They are all needed in any community when the tuberculous patients are found and are properly instructed and shown the desirability of sanatorium and hospital treatment. Indeed, in spite of the fact that Framingham is able to use a bed for every death, there are still a number of persons in the town who are having in their homes inadequate treatment for the disease. These people resist all efforts to have them go to sanatoria and also call for a physician's advice only when some exacerbation makes them acutely ill.

### Follow-Up Essential

If the Massachusetts towns and cities having tuberculosis clinics followed up their cases as carefully as should be done, there is no question that a waiting list at the sanatoria and hospitals would reappear. Should financial hard times come, doubtless the present supply of beds would quickly be used up just as rapidly as they emptied during the flush times of the war period; but Framingham has demonstrated that, with intensive follow-up work on the part of the physicians and nurses of the town, even in the period of high wages, a bed for each death is needed to care for patients that are ready and willing to receive treatment if only the matter is properly put to them and the way made easy to carry out the advice.

In a study of 460 children under seven years of age with tuberculin, 33.3 per cent were found to be reactors. Two and a half years later, of these 150 reactors, only one is known to have developed into any form of tuberculous disease. The others are for the most part specially hale and hearty children not even showing evidences of malnutrition.

This is a most important clinical contribution, for it demonstrates clearly that if a child shows a tuberculin reaction, it does not by any means follow that there is tuberculous disease. It must also make it evident from the above that in case of malnutrition a positive reacting case may not necessarily mean that tuberculosis is causing the disturbance. On the other hand, it does make it probable that the positive reacting case manifestly sick, in the absence of other diagnosis, is active tuberculosis. This, it will be seen, is by no means as dogmatic a statement as has been made by Dr. Levinson of Chicago in a recent article in *MODERN MEDICINE*.

There are other points in this study which throw a certain amount of doubt upon usual interpretations of negative findings in the tuberculin test which are hard to reconcile with the findings of others.\*

A result of the four years' work in the community has been to establish a general sentiment for good health. This is possibly hard definitely to define, but it shows itself by a general desire to respond to health appeals, and by less fear and suspicion on the part of the employees and people in general towards any health work which may be inaugurated in the factories and the

schools. Physicians' advice and examinations have been sought in a gratifying manner, this being seen especially immediately after the "flu" epidemic.

This attitude of mind has been brought about by the educational effect of the drives, the Demonstration, the health letters, the camp for the children, and the work in the schools, extending as it does to the homes. The publicity has been continuous and the needs and value of the hospital to the citizens have been emphasized. The value of the honest physician has been pointed out. Symptoms calling for advice have been given prominence in the local papers and persons with such symptoms have been urged, after having had the physical examinations, to have the affair followed up, and a physician's advice taken.

A most important study has been inaugurated recently to try to account for a certain number of cases of advanced tuberculosis which appear in spite of all the machinery that has been devised to catch them in their early stage. This, when complete, will throw more important light on the amount of tuberculosis in a community, and what the reservoir is from which the seemingly inexhaustible cases are drawn. It must be remembered in starting on this study that one-fourth of the town, in spite of all the elaborate attempts to get physical examinations, has not been reached; further, that in every American town and city, there is a very large movement both into and out of the community, and that consequently our number examined is probably less than three-fourths of the present population. In no sense is the Framingham Demonstration to be considered a clinical or a therapeutic experiment. Nevertheless, the work that is being carried on by the Community Health Demonstration is right in the line of the advance which has been pointed out by Sir James McKenzie in his recent and most inspiring book, "The Future of Medicine." Here in Framingham, as nowhere else, are the beginnings of disease being watched and studied. Sooner or later information will be available which will at least aid in the solution of many of the much debated tuberculosis problems.

### NATIONAL CHILD HEALTH COUNCIL

The formal call of the American Red Cross for the coordination of the country's health activities has been answered by the organization of the National Child Health Council, which has opened national headquarters in Washington, D. C., with Courtenay Dinwiddie as executive secretary. The members organizations are: the American Child Hygiene Association, American Red Cross, Child Health Organization of America, National Child Labor Committee, National Organization for Public Health Nursing, and National Tuberculosis Association.

Two general policies of coordination have been agreed upon: (1) There will be developed a systematic exchange of information on plans of work and itineraries of field workers. Conferences of workers, written reports, and oral discussion of plans by the Executive Secretary with each departmental director will assure the soundest methods of cooperation. (2) It is proposed to establish national advisory committees on such subjects as foods and nutrition, and the health education of school children. It is hoped thereby to avoid the present situation of confusion in the establishment of standards and in the preparation of authoritative statements on large problems of child health. The committees will seek to establish the best possible relationship between national organizations and local and state organizations, and supervise the establishment of standards in general problems of child health.

\*See Framingham Monograph No. 5.



# ADVISABILITY OF ORGANIZING SPECIAL CLASSES FOR UNUSUAL CHILDREN\*

By SISTER KATHARINE, O.S.B., Ph.D., DULUTH, MINN.

RECOGNITION of the existence of different grades of mental aptitude is as old as history. We find reference to the fool in sacred writ, not really in the sense of an imbecile, but connoting the man who lacked judgment and practical common sense. Similar references are found in the writings of Clement of Alexandria and others of the Fathers of the Church, both Greek and Latin. So general was the acceptance of a hierarchy of mental ability that Plato, in his scheme for the organization of an ideal society as outlined in his Republic, proposes that the special aptitude of each individual be determined early in life and that each person be then educated or trained in proportion to his native capacity. His hierarchy, as we may recall, consisted roughly of three tiers. On the lowest level, were the artisans and shopkeepers and those whose end in life was the acquisition of gain; on the second level were the soldiers; on the third and highest plain, the selected individuals who had minds adapted to the contemplation of ideals, as Plato termed them, or what we might term abstract, universal ideas. These were the philosophers and these were the persons who alone were judged capable of governing society, making laws, etc.

We, as teachers, have long been conscious of the fact that in the classes in our institutions and in our parish schools there were very well marked groups, corresponding in the main to Plato's hierarchy. There are present in every class room retarded pupils, technically called backward, moron, and borderline defective; average or normal pupils, constituting about one-half of a healthy class; accelerated pupils, those individuals who could go faster if allowed, but who are compelled to lock step with a system. Some of us have conscientiously spent our time and energy trying to teach the submerged portion; others have taught the middle group because it was the largest and because it represented the mean for the class; others have taught the upper group because results were more easily and more speedily obtained. It is very easy to see that there must be great loss of the pupils' time and the teacher's energy in any arrangement, however ideal, where the units are so diversified.

The results of tests given to more than one hundred thousand children and to more than one and one-half million men in our national army indicate that in an unselected group about one-third are below normal intelligence. This lower one-third would include imbeciles, who have an intelligence quotient below fifty; high and low grade morons; and dullards. The lowest grade of morons and imbeciles should not be found in the class room with normal children. In some states, Minnesota, for example, children with an intelligence quotient of even eighty-five are required to be provided with a special class. The number of persons in the imbecile group is, fortunately, very small and this fact accounts for the appreciably large number of children in the dull, borderline, and rather definitely feeble-minded group. These are the children whom

we would have grouped in one type of special class.

Before considering in some detail the advisability of organizing special classes for this group of children, let us remind ourselves that above this lower third there is a middle third, ranging to intelligence from ninety-five to one hundred five. To this normal third belong the average man and woman whom we meet, the "C" in the army rating, the "C plus" and perhaps "B minus" in our schools. The highest group intellectually is composed of persons with an intelligence quotient varying from one hundred six to one hundred seventy and over. These constitute the "superior folk" intellectually. The number of persons, so far tested, with an intelligence quotient above one hundred forty is only one in about two thousand. More than 30 per cent of all children, however, are above normal in intelligence. We find that mankind distributes itself mentally in accordance with the normal curve of probability.

Figure 1 shows the distribution of intelligence quotients of nine hundred five unselected school children. If we join the upper corners of each of the lines representing in line values the number of persons in each group, we will have a fairly good normal curve with a slight inaccuracy due to the larger number of children in the bright and very bright groups as compared with the dull and borderline groups. As we notice, there are 20.1 per cent of this special series of children in the dull group and 23.1 in the bright group; 8.6 per cent in the very dull or moron

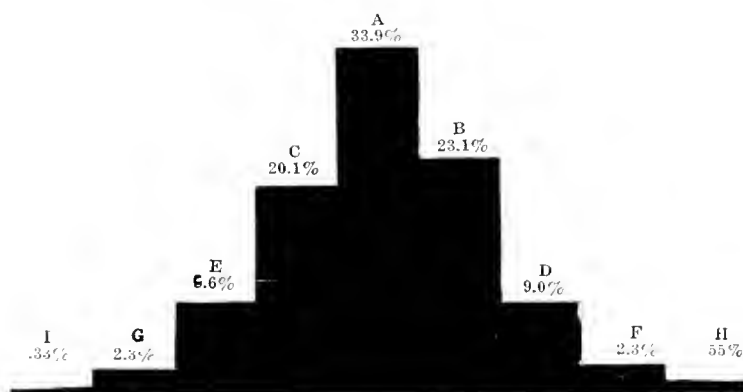


Fig. 1. Distribution of intelligence quotients of 905 unselected children, five to fourteen years of age (Terman).

group; and 9 per cent in the very bright group. While a curve constructed, using the ratings of these school children as a basis, would show a sagging on one side owing to the slightly disproportionate number of bright and very bright children as compared with the dull and borderline, a curve constructed, using the army rating (Fig. 11) as a basis, shows, very unfortunately, an opposite tendency, a very great falling off in the number of bright men, C plus, and B men. However, the discrepancy in either line values is not so great as to destroy the working value of the normal curve.

For those of us who are not accustomed to thinking in terms of normal curves, let us say that we are able to arrange people in a normal curve for any trait. Let us take,

\*Read before the National Conference of Catholic Charities, Washington, D. C., September, 1920.

for instance, the concept, happiness. If we chart ten thousand unselected persons according to the amount of happiness they possess, profess, or exhibit, we will find that from one-third to one-half of all people would be just

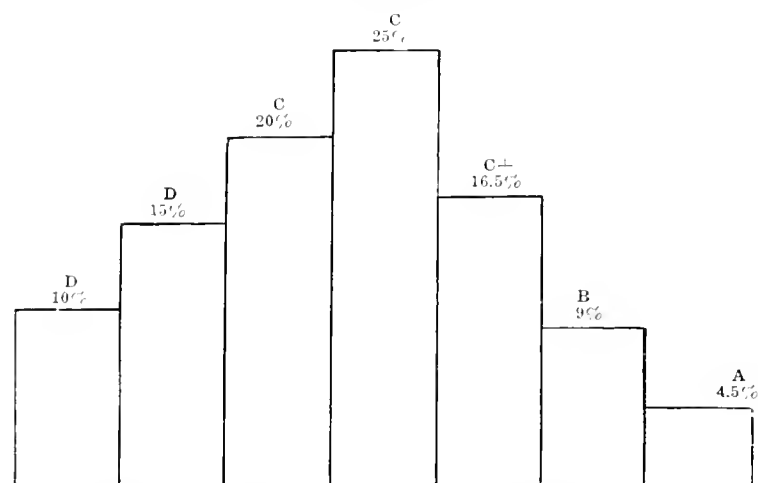


Fig. II. Diagram showing mental levels of the United States Army, as authorized and published under the authority of the surgeon general.

ordinarily happy; a still smaller group would constitute the temperamental optimists; a very much smaller group, the Pollyannas; a very small group, consisting of about  $\frac{1}{2}$  of 1 per cent, the exalted paranoiacs whom we find in institutions for the insane. On the other half of the curve, we would place the pessimists, corresponding in number with the optimists; a still smaller number of unfortunates known as melancholians; smallest of all, a group of persons, the suicidal morose, whom we find again in institutions for the insane. If we group persons as to stature, wealth, or any other accidental property or quality, we find the normal curve tendency pronounced.

For a long time we thought that with proper environment in the way of a home of ordinary opportunities, properly prepared teachers, wholesome food, attention to the elimination of such physical defects and weaknesses as were remediable, the mental capacity of most children could be increased to about normal. However, despite the fact that we have better prepared teachers, the beginnings at least of better organized recreations, compulsory education laws, school nurses, and free medical care, the number of retardates remains practically the same. Removal of diseased tonsils, adenoids, etc., attention to decayed teeth, weak eyes, and other physical defects are certainly a help in restoring normal health and possibly in conserving the life of the child; but its mental capacity is quite another factor and this factor remains practically constant throughout life. The superintendent of the Hebrew Orphan Asylum in New York, an institution which houses about seventeen hundred children, remarked recently that it was the experience of the management that "the removal of adenoids and diseased tonsils did not cause a rush of brains to the head." We do not wish to underestimate not only the value but the absolute necessity of proper

medical care, a well balanced, wholesome, and plentiful diet, plenty of fresh air, and abundant opportunities for healthy physical exercise; but when all these matters have been attended to, the child has just his native brain capacity and no more, and it is quite as impossible to obtain from him reasoning processes in excess of his capacity as it is to pour four quarts of water into a two or three quart vessel.

There is very wide variety in the human race, even if we leave out of consideration in this study the two lowest types, congenital idiots and low grade imbeciles. A survey made of persons, 732 in all, who had studied arithmetic during the same time and under practically the same circumstances, reveals some very astonishing findings. About 20 per cent of the group succeeded in working the one hundred problems submitted, correctly; some could not get five. If we consider the children composing the two extremes, how, we may ask, can they be taught efficiently in the same class room? Is not one apt to be either in a state of chronic discouragement or perpetual indifference, depending upon the temperamental bent? Again, let us take the case of

some thirteen year old children whom we can pick out among our friends and pupils. Some of these thirteen year olds have been able to complete the grades and one or two years of high school; others have never been able to complete satisfactorily the work of the third grade. Between these two groups there will be children who complete the eighth grade at fourteen, fifteen, sixteen, or never. While in some cases these facts are due to difference in maturity or difference in opportunity, in a large number of cases the difference is due to native capacity. Absolute achievement is due to environment—educational

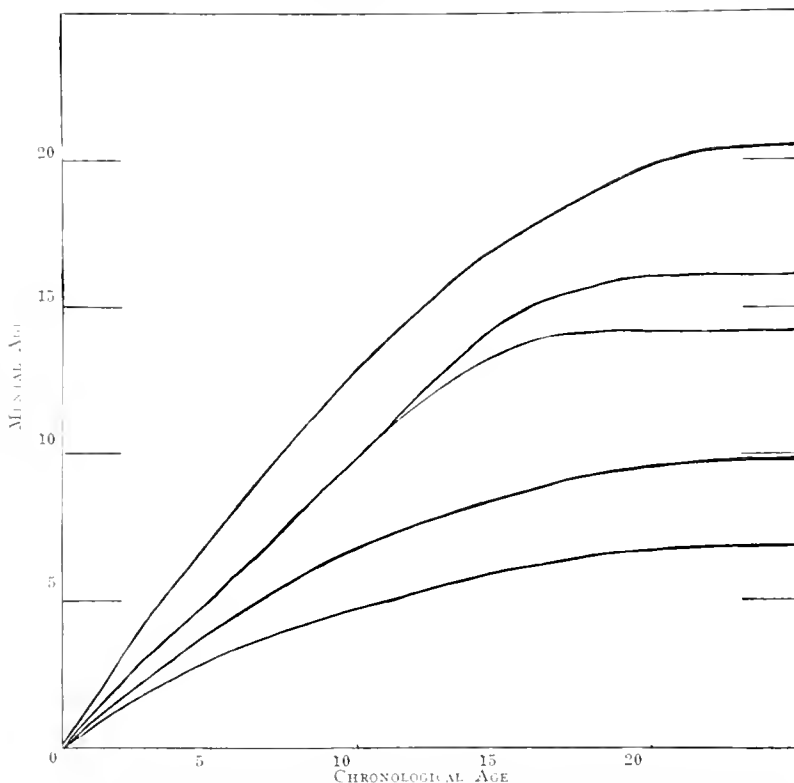


Fig. III. Diagram illustrating possibilities of development of children differing in capacity at five years of age. Vertical distances represent mental age; horizontal distances chronological age (Schematic).

opportunities, encouragement, etc. Relative achievement is due to native capacity.

The intelligence quotient or mental brightness of a child can be determined with a very fair degree of accuracy at five or six. Look at Figure III. The horizontal line represents the chronological age of subjects whose intelligence quotient or mental brightness we wish to determine. Mental ages are represented by corresponding divisions on the vertical line. The lowest curved line represents, diagrammatically, a child who was given a mental test at five years of age and who merely succeeded in passing the test at a three year level; he passes the same test at five that normal three year olds would pass. This child is, then, two years retarded at five. He starts to school and progresses—slowly, it is true—but there is progress until the second or even the low third grade is reached. No further mental development will then be possible. This child will likely be pushed along by automatic promotion, making a grade in two years or in three years, but he is simply being kept in school. He is not developing. The third lowest curved line represents a child who is just able to pass the same test at five that other unretarded, mentally normal children pass. His mental age and his chronological age are at the same distance from the vertical and horizontal lines, respectively, at five. This child's development will continue until he has reached the fourteen year level according to the army rating and the sixteen year level according to Terman's

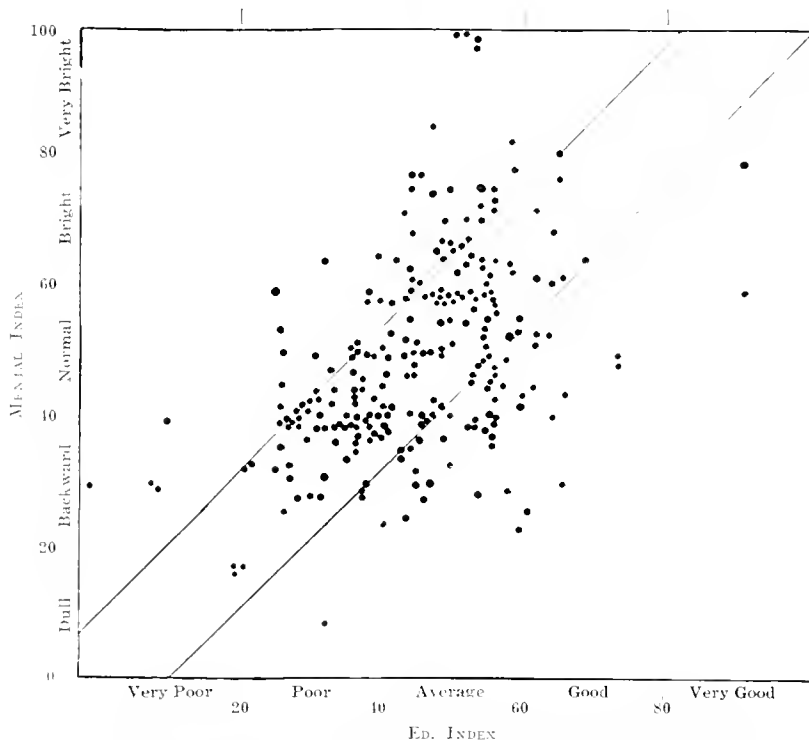


Fig. V. Diagram showing mental status and educational status of children in a school, Columbus, Ohio. For explanation see text. (From an unpublished survey by Pintner.)

rating, when the nerve and brain structures are developed.

Let us here remind ourselves that the nerve structure is complete at about fourteen, after which time, while new associations can be formed and almost limitless knowledge acquired, no further development is possible. This is true of normal individuals. There seems to be an exception in the case of some selected individuals who at the age of five have a mental age of, let us say, seven or eight (Fig. III, highest curve). There may be development in these cases up to the age of twenty or even higher. However, the mental life and possibilities of development of these unusual children has not been worked out with any degree of surety.

The second lowest line represents a very common type. Here we have a child one year retarded mentally at five—he simply passes a four year test at five. This retardation is serious at that age. The child will make fair progress in school up to the fifth grade. At that stage, work begins to involve the higher mental processes and not simply memory for the most part. He fails regularly. His teachers do not understand him; his life becomes monotonous and dull; he has no interest in work which he does not understand; he drags on for a few years, but he will never be able to complete the work of the eighth grade unless by a system of automatic promotions. Let us recall that 67 per cent of all children leave school without finishing the eighth grade. In administering the Binet test and other mental tests, we have noticed that a very large number of children in the fifth, sixth, and seventh grades will pass the test only at the nine years and eleven

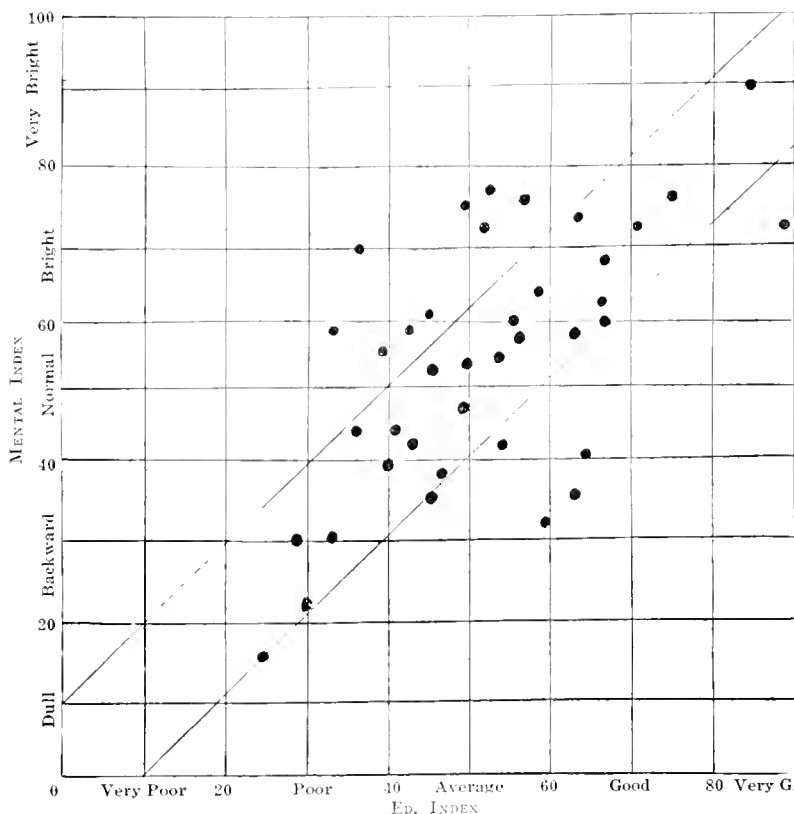


Fig. IV. Diagram showing mental status and educational status of thirty-eighth children, Grade VII (a). (After Pintner, Williamson, Va.)

months level. In all cases these children were reported, in after discussions with the teachers, as being slow, sulky, stubborn, unable to study arithmetic, etc. We think the slowness, sulkiness, etc., were in most cases due to the fact that the material as presented was beyond the capacity of the child and that it was the teacher or system that was to blame.

It would be possible for a teacher who is sympathetic and a leader to do no end of good in vocational guidance if she had even a fairly good diagnosis of the mental possibilities of a child. The intelligence quotient of the average man is about 105, or he is at about a fifteen year level, according to Terman. The army rating would place him lower. Pupils with an intelligence quotient of 100 or below should not be encouraged to go beyond the eighth grade. They will fail in the more severe reasoning processes required in the study of mathematics, the natural sciences, and Latin. Of the 10 per cent who attend high school, only 3 per cent graduate. Might it not be possible that a little vocational guidance would lower this educational mortality? Most universities now require an intelligence quotient of 115 or over for admission to the freshman year. Persons with an intelligence quotient of 120 or over will be best for the professions. Tramps were found to have an intelligence quotient of about 85; street car conductors were found to have an intelligence quotient of about 85; sales girls, 84. Every now and then, it is true, there will be found an individual in all of these vocations who has an intelligence quotient of one hundred twenty or over.

We have endeavored to bring into consciousness two facts, the existence of well defined differences of capacity in any group of individuals, provided the group be unselected, and the fact that physical and environmental influences do not increase the native capacity, though both can, if highly unfavorable, prevent the individual's development up to his native capacity.

The underdeveloped child is, then, we are forced to admit, present in every class room of every institution and every parish school. What shall we do with this type of child? Shall we organize special classes or shall we just let this type of child sit in the back seat and drag along from year to year, growing chronologically and physically, but becoming less and not more efficient to cope with conditions in a world of ever increasing complexity—a world into which he must soon enter as a wage earner and in whose merciless service he will at best be tried "as gold in the fire"?

It is astonishing the rapidity with which the movement to compel school boards to organize special classes has grown. There are few states that have not laws excluding the underdeveloped child from the class room of the regular student. We may expect soon to have these laws extended to include all child caring institutions, and eventually all parish schools. To state a few examples of state legislation on this matter, Minnesota was one of the first states to officially recognize the need of special classes. As early as 1915 we find enactments providing for the organization of special classes for the mentally subnormal.<sup>1</sup> The law provides that subnormals be taught in special classes and that their training be under the direct control of the state Superintendent of Public Instruction. All teachers of such classes are to be approved by the said superintendent. " . . . There shall be paid annually out of the current school fund in the state treasury in the month of July to the treasurer of the school district maintaining a school or schools for mental

subnormal children under the charge of one or more teachers whose appointment and qualifications shall be approved by the state superintendent of education, the sum of one hundred dollars (\$100.00) for each mental subnormal child instructed in such school or schools having an annual session of at least nine months during the year next preceding the first day of July."

Arrangement of details as to organization of classes, content of curriculum, qualification of teachers, etc., were left in the hands of the state superintendent of public instruction. The department now provides that the enrollment in these classes shall not exceed fifteen, that only such children as have an intelligence quotient between fifty and eighty-five shall be admitted. Children above eighty-five in intelligence, even if seriously retarded from an age-grade standpoint, shall not be admitted to these special classes; and children below fifty in intelligence are to be sent to the institution for the feeble-minded at Faribault, since they are thought unfit to profit by any instruction that could be given them in these special classes. It is further provided that children suffering from remediable diseases shall have them cared for before being examined for the special class. The Department of Education of the State of Minnesota further provides that "children with mental development between fifty and seventy-five per cent of an average normal child shall be regarded as cases requiring commitment to the State institution at Faribault on their leaving the public schools and shall be so recorded." In view of the fact that many of our retarded children drift sooner or later into these special classes in the public schools, this last clause has special significance.

We think, however, that the laws governing the organization of special classes in Minnesota and the detailed regulations of the superintendent of public instruction under authority of the law have outstanding good features. The state is munificent in its provision of one hundred dollars per year per pupil instructed. The preparation of teachers for these special classes has been ample and the subnormal child in the public school has been well cared for.

New York, as a state, seems to have awakened to the fact that there were children in school who were unfit to profit by the type of instruction given in the ordinary class room somewhat later than Minnesota. The New York legislature<sup>2</sup> of 1917 provides for the education of children with retarded development. The law requires that the trustees or board of education of each city shall take a census of all children who are three or more years behind grade. Where ten or more children were found to be mentally retarded, special classes were to be provided with instruction adapted to the mental attainments of these children. The legislature of 1918 made detailed provision for the organization of special classes. Two psychologists were engaged by the education department at Albany, and gratuitous aid assured to every town or city wishing to inaugurate the special class movement. Recently a superintendent of a large system in the State of New York remarked that every self-respecting school had now a class for retarded children. He was pleading for the further organization of classes for accelerated children. Special classes for the precocious child are as necessary as provision for those who are retarded in development. If improper methods in the latter case aggravate their maladjustment to life, it must be apparent that much instability in accelerated children can be charged to the attempt to hold them to a line of conduct ill adapted to their needs.

(To be continued)

<sup>1</sup> See, 4, c 194, Laws of 1915.

<sup>2</sup> Education Law, Article 20-B, Sec. 578.

# BOOKS OF THE MONTH

## Comment on Current Medical and Health Literature and Announcements of New Books

**HUMAN PARASITOLOGY**, With Notes on Bacteriology, Mycology, Laboratory Diagnosis, Hematology and Serology. By Damaso Rivas, B.S., Biol., M.S., M.D., Ph.D.<sup>1</sup>

To Rivas belongs the well deserved credit of bringing out the first fairly complete English text on Parasitology. The volume possesses many features worth mentioning, chief of which is the omission of the newer and confusing biological nomenclature, which has proved more embarrassing than elucidating.

The author has most completely discussed the subject of parasitology, including protozoan, metazoan, and vegetable parasites and the importance of bacteriology, laboratory diagnosis, hematology, and serology in the various parasitic diseases has been properly emphasized. A valuable chapter on macroscopy and microscopy has been incorporated in the text, which will be found to be of value to many workers in parasitology.

The text is profusely illustrated, though the author can be justly criticized for his selection of illustrations, in that he has used many from other texts. It is to be regretted that more original illustrations were not used or that in making his selection a more expansive source was not consulted. Many illustrations could be improved upon greatly had the author used texts other than those employed. A very valuable light of references added to each chapter greatly enhances the value of the book.

**SURGICAL THERAPEUTICS AND OPERATIVE TECHNIQUE**. By E. Doyen. Prepared by the author in collaboration with H. Spencer-Browne, M.B., Cantab., etc. Volume III, Regional Surgery (continued). Operations on the abdomen.<sup>2</sup>

In the third volume, which has recently appeared, we find many of the same attributes which characterized the former two volumes. The work is the work of a genius who, as is common to genius, is apt to lack thoroughness and balance. Certain features are dealt with at great length and in great detail, while other subjects in which Doyen was less interested, but which from the point of view of the general surgeon may be just as important, or even more so, are treated most superficially. The diseases of the rectum, including congenital malformations, hemorrhoids, polypi, malignant tumors of the rectum, fissure in ano, pari-rectal sinus, etc., etc., are treated in about one-third of the space devoted to the discussion of vaginal hysterectomy and vaginal pan-hysterectomy. Doyen describes but one method for each operation, the method he uses; this makes the book interesting and adds a genuine personal touch to its chapters, but herein would lie the danger to the student, for it is doubtful whether many of Doyen's methods would be as successful in the hands of others as they appear to have been in his. His approach for the gall bladder and bile passages by

this chondo-costal incision would probably not meet with hearty approval by the modern surgeon who has successfully performed innumerable gall bladder operations through the more usual and much simpler incisions.

The mature surgeon will enjoy reading Doyen, the young surgeon or the student will find it much more profitable to spend his time on some of the other modern surgical works.

**DIABETES. A Handbook for Physicians and Their Patients**. By Philip Horowitz, M.D.<sup>3</sup>

The author has contributed many articles to recent medical literature in support of his theory that diabetes mellitus represents a phase of intestinal auto-intoxication which can be treated by the ingestion of *B. bulgaricus*, provided proper dietary regulations are followed. Most students get as good results without the theory or the therapy of Horowitz. The book is an easily readable summary of present day methods of handling diabetes. It lacks (as do many similar American books) all reference to pioneer work of other investigators—which we believe shows scientific bad taste. It is also to be regretted that a much advertised brand of drinking water receives considerably too much free advertising in the pages of a book of science.

**PATIENT'S HANDBOOK ON THE TREATMENT OF DIABETES MELLITUS**. By Thomas W. Edgar, M.D.<sup>4</sup>

This is a handbook for patients! If the patient happens to have a literary taste, he might object to some glaring abuses of the English language found in its pages. If he be scientific he might wonder what has happened to Naunyn, to Joslin, to Allen,—diabetics are usually well read; if inquisitive, he will want to know more of the author's serum treatment, and of the nettle infusion which "is evidently of very great value in the treatment of diabetes."

But we doubt if he will really learn enough from the book to justify the addition of such a manual to his library.

**A TEXT BOOK OF ORGANIC CHEMISTRY**. By A. F. Holleman, Ph.D., F.R.A. Amst. Edited by A. Jamieson O.B.E., Ph.D., F.I.C.<sup>5</sup>

The fifth English edition of Holleman's textbook presents many additions in subject matter over the older issues. The author has allotted additional space to methods which the student of modern organic chemistry must at least know in principle, such as refractometry, viscosity determination and others.

The book of Holleman is so well known and so widely adopted, that criticism of any kind is unnecessary. The book speaks for itself.

1. W. B. Saunders Co., Philadelphia, 1920.  
2. Wm. Wood & Co., New York, 1920.

3. Paul B. Hoeber, New York, 1920.  
4. Richard G. Badger, Boston, 1920.  
5. John Wiley & Sons, New York, 1920.

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GRUNDBRISS DER HYGIENE UNTER MITWIRKUNG VON ZAHLREICHEN FACHGENOSSEN HERAUSGEGEBEN von Prof. Dr. Med. Hugo Selter. Band I: Allgemeine und sociale Hygiene, die übertragbaren Krankheiten. Band II: Hygiene im Städtebau und in der Wohnung.<sup>6</sup>

To review a work of this calibre in a few words is to do it an injustice. Written by twelve eminent specialists, it is, beyond doubt, the most complete work on hygiene in any language. It is a veritable library on hygiene in all its diversified branches.

Vol. I comprises general and social hygiene as well as communicable diseases. Chapter I contains statistics on birth-rate, illegitimacy, mortality, recruiting statistics, etc. Unfortunately, these are limited to European cities and countries. Chapter II takes up aid in all its phases, as well as climatology, the latter limited to the Eastern Hemisphere. Chapter III, on nutrition and nutriments, is very comprehensive. It includes such subjects as coffee, tea, tobacco, opium and the various alcoholic beverages and the means for curbing alcoholism. Chapter IV is on clothing. Chapter V treats of bodily hygiene through bathing and exercise, takes up the various forms of baths and bathing institutes and, rather minutely, the effect of various exercises on the body and its organs. Chapter VI, on childhood and adolescence, is very thorough, including such subjects as infant mortality (in Germany), school hygiene (including architecture, heating and ventilating systems), etc. Chapter VII takes up industrial hygiene in all its phases; Chapter VIII the prevention of industrial diseases and accidents, as well as the various forms of insurance and the more direct phases of industrial medicine. Chapters IX and X are devoted to communicable diseases.

Volume II is a complete work in itself. It considers human habitations, individual and collective, beginning with the soil and ending with illumination, natural and artificial. The hygiene of city planning is very exhaustively treated, embracing the deleterious effects of cobblestone paving, the disposition of gas-pipes, etc., also such obvious subjects as sewage disposal, water supply, etc. Disposal of garbage and carcasses as well as the disposal of human corpses are treated most thoroughly. The hygiene of dwellings and of hospitals comprises the selection of site, of material and of heating appliances, of architecture, including sound-proofing, ventilation and lighting. To this latter subject an entire chapter is devoted.

It is to be hoped that, ere long, this work will appear in an English translation.

THE NEWER METHODS OF BLOOD AND URINE CHEMISTRY. R. B. H. Gradwohl, M.D., and A. J. Blaivas, St. Louis.<sup>7</sup>

The book is a good compilation of methods used in the laboratory, with discussions as to the interpretation of results. The chapter on basal metabolism is timely and well written, although a more complete description of the portable respiration apparatus might seem desirable.

While the author has included in his new edition the latest methods of blood analysis by O. Folin, he might have safely dropped some of the rather obsolete procedures still contained in the text. The color plates leave much to be desired. Phenolsulphonephthalein and uric acid will produce colors quite different from those shown in the Plate I. A statement like—"Add oxalate to the blood and defibrinate," could have been avoided.

The book as a whole is good and will prove a valuable help to the workers in that field.

6. Verlag Von Theodor Steinkopff, Dresden and Leipzig, 1920.  
7. C. V. Mosby Company, St. Louis, 1920.



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## MATERNITY BILL FAILS

IN THE final days of the last Congress, the Sheppard-Towner bill which had in different forms passed both the Senate and House, failed to become a law because of the failure of the two houses to agree upon the provisions of a compromise bill. The high hopes expressed by friends of the measure that beginnings on a large scale would be made to educate and aid motherhood have been dashed for the moment, but we feel confident that the defeat is only temporary. The need is too urgent and too appealing to be left unfilled.

While the discussions continued in Congress over the provisions of the bill, the Children's Bureau presented the report on a survey of infant mortality in New Bedford, Mass. The report gives some startling facts in full verification of previous reports. The investigation found that over half of the New Bedford babies lived in sections where families of from fifteen to eighteen, including lodgers, were in many cases crowded together in five room tenements. Practically all the mothers working in the New Bedford mills were in families where the father earned less than the amount necessary to maintain a decent standard of living. Almost half of all the mothers were gainfully employed during the year before the baby was born and two-fifths during the year following the baby's birth. Most of these mothers worked during both periods. Among the babies whose mothers left them to go out to work when the baby was less than four months old, the mortality was nearly twice the average rate.

The low income group showed a high mortality rate, while the group having incomes sufficient to insure proper care and surroundings for the mothers and babies had a low mortality rate. In

the low wage group, twenty babies out of every hundred born alive died before the end of the first year. In the highest wage group only six out of every hundred babies died.

Such facts cannot forever fall upon deaf ears.

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## SICKNESS SURVEYS

HOUSE to house canvasses to determine the amount of sickness have had considerable vogue during the last three or four years. The results of these surveys have been generally accepted without consideration of their limitations.

The first limitation is that the evidence is based upon what is told by the persons questioned. It is a self-diagnosis reported to non-medical canvassers. There are no means of checking up the facts. Such canvasses include old and young and all of the chronic malingerers; they do not include those who are really disabled but who are at work. When the memory of people is relied upon for the illnesses of the previous year, the unreliability of the statistics must be obvious.

Even supposing the canvassers could secure reasonably correct information, there still remains the difficulty of selecting a time for the canvass when the conditions are typical. The mortality statistics for 1919 indicate more than twice as many deaths in January as in September. The studies of morbidity in insured groups made by the United States Public Health Service indicate that sickness is four times as prevalent in certain seasons as in others. These facts make it plain that a survey in the summer months will not give an accurate picture of the health of the community any more than would a similar survey in January or February.

Accurate statistics of disabling sickness can be obtained only through the study of insured groups

where there is adequate check to determine the validity of sickness claims. But even here the figures can be made of general application only if the groups from which they are taken are all inclusive and not selective.

### EYESIGHT AND EFFICIENCY

WE PRESENT in this issue a comprehensive review of recent authorities on hygiene of the eye, as it relates to the efficiency of children in schools, workers in industry, and people generally; its reading cannot but impress one with the vast range of problems which are yet to be solved in school and industry and public places, in the attempt to realize the ideal of "daylight lighting."

The author states in summary, "The amount, quality and distribution of light in schools, libraries, factories, etc., should be carefully regulated; at present such buildings are poorly illuminated." The author quotes further from authorities that "Ophthalmologists should carry out investigations in estimating the effects of errors of refraction, errors of muscle balance, defective illumination, and so on, on the fatigue of the workers in different processes of various industries."

Attention is called to the fact that visibility, legibility, and eye saving characteristics of printing are generally overlooked. He quotes from Surgeon General Braisted, "If fine print could be officially stigmatized as a menace to eyesight; if the Federal government were to forbid transmission through the mails of children's school books improperly printed, we would have a ready solution of the problem."

Special methods of lighting for industry, the use of protective glasses, myopia and education, the supervision of school children, the care of the eyes in nursery children, ophthalmology in programs of child hygiene, the conservation of vision, the prevention of blindness and of trachoma, are some of the subjects reviewed in this summary of a subject the importance of which increases in the public mind at a rapid rate.

### ABOLISHING PROGRESS

THE *Boston Transcript* comments editorially upon a proposal of the State Board of Control of Vermont, in which the *Transcript* states, "The Vermont legislature is asked to vote for the repeal of progress," for if the report of the Board were adopted "it would evince a determination to wipe the twentieth century out of human experience and by some legislative magic to put the state back into the nineteenth or even the eighteenth." After citing the proposal to repeal all laws that support activities that are paternalistic in their nature, such as forestry, boards of examination

and regulation, associations that promote special interests of agriculturists and other producers, investigations of water supply, the work of the Department of Agriculture against bovine tuberculosis, creamery inspection, etc., a large part of the appropriation for education, the Board goes on to state that they favor a return to such public health system as may have existed in former days. The *Transcript* adds that "the report may be regarded as an example of the remarkable productions which sometimes find their way into legislative halls rather than as cause for alarm for the future progress and prosperity of the neighboring state." The editorial states that the document suggests the "vagaries of the Chestertonian intellect" because it leaves in the minds of the readers a question as to how much of it is really meant by the Board, "who think they are to be taken with entire seriousness in asking Vermont to obliterate the twentieth century."

### PERSPECTIVES IN HEALTH WORK

CONSIDERABLE attention is regularly given in the newspaper press to the manifestations of unusual diseases. Reports of unusual diseases frequently become front page material. The medical press often reflects the interest of the public in such diseases and medical research gives time to their investigation all out of proportion to the importance of the subject.

That such diseases have a spectacular interest one cannot doubt: that is the reason why the public press features them. But the annual report of the Mortality Statistics coldly places them in their proper position in the health movement. It is well that this is done; otherwise, we should have a distorted view of the public health needs. The examination of the causes of death usually tends to bring the emphasis of study and publicity where it properly belongs.

The statistics of mortality recently published by the Census Bureau for 1919 show that in the registration area there were 1,096,436 deaths. Of these deaths, heart disease caused 111,579, pneumonia 105,213, tuberculosis of the lungs 94,772, influenza 84,113, acute nephritis and Bright's disease 75,005, cancer and malignant tumor 68,551, violent deaths 67,674, cerebral hemorrhage and softening 66,918, diarrhea and enteritis 37,635, bronchitis 10,913, diabetes 12,683, diphtheria and croup 12,551, appendicitis and typhlitis 10,029. These figures show that more than 70 per cent of all the deaths came from the causes mentioned. The emphasis of medical study and publicity should, therefore, be turned to the organization of work for the prevention and cure of these diseases which are taking such a heavy toll.

# PHYSICAL RESTORATION IN THE REHABILITATION OF DISABLED PERSONS\*

BY WILLIAM T. CROSS, SURVEY OFFICER, STATE DEPARTMENT OF PUBLIC WELFARE, CHICAGO, ILL.

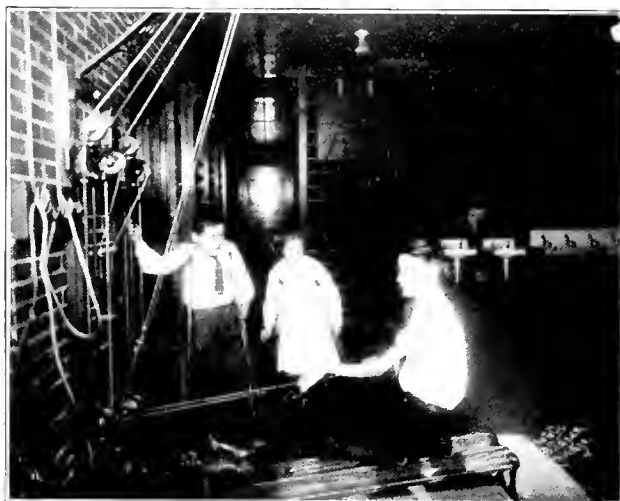
“**A** PHYSICALLY handicapped person,” according to the Illinois law, “shall mean any person who, by reason of a physical defect or infirmity, whether congenital or acquired by accident, injury or disease, is, or may be expected to be, incapacitated for remunerative occupation.” This definition of physical handicap is used also in the Federal (Fess-Kenyon) Act. It is noteworthy for its description of a person’s physical condition in terms of occupational efficiency. “Rehabilitation,” according to the Illinois act, “shall mean the rendering of a person physically handicapped, fit to engage in a remunerative occupation.” The law provides for placement of disabled persons in industry, as the final step in the process of rehabilitation. The more important services provided in the Illinois law are: (1) Acquiring information concerning persons who may be physically handicapped. (2) Arrangement for such therapeutic treatment as may be necessary for rehabilitation. (3) Procuring and furnishing at cost artificial appliances. (4) Arrangement for vocational training, including payment of maintenance for twenty weeks at ten dollars a week, and subsequent placement in industry. (5) Arrangement for social service and advice in the home.

## Child Labor and Injury

Oliver Sleszynski was nineteen years old at the time of his operation in January, 1920. He was an illiterate Polish boy. He had started to work in the mines almost as soon as he could lift a pick. In May, 1917, a mine explosion crushed his left leg. It was amputated in the middle of the thigh, and he was in the hospital for six months. He was discharged with the stump healed, except for a small discharging sinus which the surgeon told him would heal shortly. He was not fitted with an artificial leg.

He received \$1,900 compensation. This money was turned over to his father and step-mother and, with only a few dollars in his pocket, Oliver came to Chicago, where a sister was living. Failing to locate his sister, he secured lodgings in a cheap hotel and for three weeks vainly sought employment. Other cripples stayed at this hotel and they obtained their living by begging. It is the practice for such persons to procure licenses to sell shoe strings or other merchandise, which they display only when a policeman is in sight. Oliver, despondent and moneyless, was about to procure his license when someone told him of a society engaged in rehabilitation work.

This society sent him to a hospital for examination. It was found that the sinus on the end of his stump had never healed. A reamputation was performed, removing four inches more of the thigh. After eight weeks of hospital residence, he was measured for an artificial limb and in two more weeks he was able to walk about without crutches or cane. During his stay at the hospital, Oliver was taught English and tried his hand at several kinds of occupations. He was anxious to learn photography and to become a motion picture operator. Books on the subject were procured and many of his English lessons were taken from these books. When he was ready to leave the hospital, a job was found with a motion picture concern, developing films at night. For this he received five dollars a night. In the afternoons he



This rowing machine for developing withered limbs is a part of the equipment of the Spaulding School for Crippled Children, Chicago. The School, maintained by the Board of Education, accommodates about three hundred day pupils.

continued his study of English and took up other subjects. His pay was raised and, recently when the concern closed down, Oliver secured an excellent job at the same business at Kansas City.

Oliver Sleszynski presented a problem of rehabilitation from the day he was injured. The way to reconstruction was made harder for him by his illiteracy, by the lack of industrial opportunities in the mining community, and by parental estrangement. The compensation allowance was not used for his rehabilitation and he was discharged from medical oversight without an artificial leg and with an unhealed stump that eventually required reamputation. To an already difficult task of reconstruction was added the discouragement that followed incomplete surgical attention.

It has been estimated on the basis of community censuses made during the recent survey that

\*The data contained in this article are taken from the results of a survey relating to the rehabilitation of physically handicapped persons in Illinois, given in part in the Report of the Director of Public Welfare, State of Illinois, 1919-20.

from 1 to 1.5 per cent of the population of Illinois cities are physically handicapped. In every community of several thousand population are to be found many persons whose physical disabilities interfere with remunerative occupation. The



These children at the Spaulding School are taking lessons in cobbling for the therapeutic value of the work.

problems of reconstruction which they present vary almost as widely as the number of persons, for in each instance the individual's attitude, the nature of his disability, and the time in his life when it occurred, his education and training, his home situation, and the variety of occupations in the community are to be considered.

In one village, for example, twenty-five seriously injured coal miners were visited. They had all become disabled within a year. They constituted by no means all the disabled inhabitants of the town, yet they were more than 1 per cent of the population. There is little chance for good surgical diagnosis and treatment in the place. Nineteen of the men are unemployed at the pres-



Weaving is particularly adapted to the needs of certain of these handicapped individuals. It affords the necessary interest and activity without undue strain, while providing a means of self-support.

ent time, and twenty-three understand no other occupation; fourteen of the twenty-five do not read or write English. The community does not afford a variety of occupations or much chance for learning new trades. There are no well developed welfare agencies.

### Medical Agencies Surveyed

Special inquiry has been made concerning the number of physically handicapped persons discharged from hospitals in Illinois. For twenty-nine general hospitals with a total bed capacity of 5,596, it is estimated by superintendents that 2,405 persons were discharged last year with handicapping disabilities. Estimating on this basis for institutions not replying, it appears that approximately 7,500 persons are discharged from general hospitals in Illinois annually with handicapping disabilities. Four-fifths of the number of cases reported by the twenty-nine hospitals were from five of the larger institutions. Cook County Hospital, Chicago, reported 1,042, not including surgical cases. Even though the figures given in most instances are estimates, and no common rule could be applied as to the seriousness of the handicap, it is probable that the number of physically handicapped persons known to hospitals, dispensaries and other medical agencies is greater than the number that may be reported through any other channel.



Passive exercises to develop useless members are employed at the Spaulding School for Crippled Children. The school provides the best medical and surgical care, in conjunction with standard instruction.

A special study was made of 178 cases on the medical and surgical wards of St. Luke's and Cook County Hospitals, Chicago. About one-third were found to be in need of industrial rehabilitation, or special occupational readjustment. A large percentage of the men needed rehabilitation. In most instances the men appeared not to have considered their future possibilities and had no suggestions to offer as to kinds of work for which they might be fitted.

A comparatively small group among the women were in need of rehabilitation. A striking case was that of a well educated elderly woman suffering with tuberculous spine and lupus on the face and neck. On recovering she will be frightfully disfigured. She has been a governess all her life.

More were found to be permanently disabled on the medical wards than on the surgical wards. Chronic heart cases were found to have returned

in some instances many times, the lack of success in treatment being due chiefly to inability of the physician to control the occupation and mode of living after discharge.

In the replies received from 101 hospitals in the state, only nineteen indicated that they had physiotherapeutic apparatus, and only four of these reported organization and staff for occupational therapy. Fourteen hospitals in Illinois are known to have organization and staff for social service in the home.

In organizing for rehabilitation of patients after discharge it would be of assistance for hospitals to record in every case the physicians' prognosis in respect to physical handicap, and in cases of serious disability his statement of specific types of occupation in which the individual may or may not become engaged. Another important step would be the adoption in all hospitals not now having them, of up to date therapeutic equipment



Work for the shut-in. An orphan girl in a poor home, victimized by spastic paralysis, trained by the Vocational Society for Shut-Ins. Her hands are becoming pliable, and she is losing her invalid introspection.

and methods. For Canadian military hospitals it is reported that at least 50 per cent of all hospital populations have required and received some kind of physiotherapeutic treatment. In addition to these provisions, every hospital that undertakes to do as much as possible toward re-establishment of patients after discharge will require

a social service department or, in case of the smaller institutions, a system of referring patients to standard social service organizations.

### Industry and Insurance

What the employer may do toward the physical and occupational restoration of workmen is illustrated by the following case:

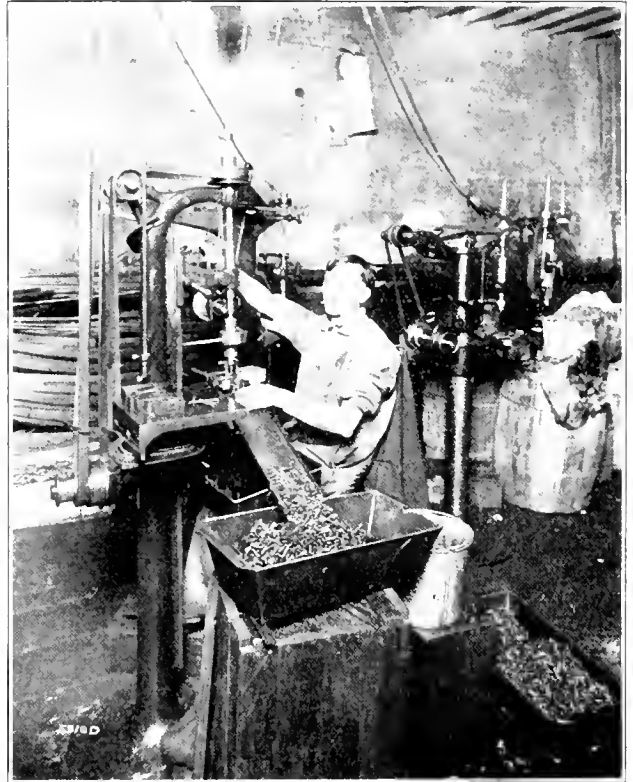
Mr. Schmidt, 35 years old, American born, had been suffering from arthritis, and was unable to continue his work as box maker for a garter company. His wife also worked in the garter factory. The fourteen year old son was at work and assistance was given by relatives.

Competent medical care improved Mr. Schmidt's condition. The factory's interest was aroused, and he was supplied with home work. During this time Mrs. Schmidt broke down under the nervous strain. It was later discovered that a part of her trouble was due to her posture at work. Her job was changed, and work limited to half a day—the factory supplementing her wages.

When Mr. Schmidt was able to earn \$17.00 a week on home work, effort was made to replace him in industry.

The economic re-establishment of Mr. Schmidt and his family grew out of the interest of the

employer in his and his wife's working conditions. Where only a few employees are involved, the solution lies in the personal interest of the management; but where many disabled persons are to be employed, systematic supervision by the medical department of the industry is necessary.



Tapping machine operator, Harvard Electric Company. This man lost his sight, but not his job, as the Chicago Lighthouse trained him to continue to earn his living at the old job by touch.

This includes control of transfers from one job to another and preferential assignment of persons with specified types of disability to certain jobs. The use of standard job analyses in placement of physically handicapped persons has been studied in the present survey. These job descriptions would be of more assistance if with each job were checked the specific disabilities which would not interfere with performance of the work, as agreed upon by the medical department of the concern.

That only able bodied workmen could be used in their plants was found to be the attitude of a number of employers or foremen interviewed; but in nearly every plant disabled workmen were seen. Analyses were made of ninety-two different jobs in twenty-three representative industries and it was found that at least 9 per cent of the employees in these plants were engaged at work that might be performed by disabled persons. Some disabilities, such as defective hearing, hernia or amputation of one leg, were found to interfere very little with work in these manufacturing



establishments, whereas opportunities for the blind or for one armed men were comparatively rare.

In sending a man whose physical capacities are understood to a task whose physical requirements



Workshop of the Service League for the Handicapped, Chicago. From left to right: a victim of infantile paralysis who until recently crawled; young man without hands; man with useless legs who had not worked for ten years; man with leg amputation who had spent two years in the hospital, all trained to new activities.

are known, and in safeguarding the processes of promotion and transfer, room is made for the employment of an indefinitely large number of physically handicapped persons and a barrier is erected against the occurrence of accidents and disease. The improvement of medical service, especially of a preventive nature, tends to establish a better relationship between man and job. One Illinois concern with a pay roll of six thousand persons is found to have a well equipped department of physiotherapy in its medical division. To the customary functions of medical departments, of examining employees and of sanitary inspection, might be added the functions of refitting injured employees for work in the plant and of supervising the employment and promotion of disabled men.

### The Matter of Re-employment

A study has been made of the circumstances of re-employment of 2,089 persons seriously injured at work during the year 1919. Two-thirds of these were re-employed by the same concern, at least for a short time, 75 per cent of them being put back at their former jobs. Young men were more frequently retrained by their former employers than older ones, and scarcely any systematic retraining was given.

Through the cooperation of industrial concerns, of insurance companies, and of the state in the administration of the Compensation Act, it is apparently possible to accomplish a great deal toward the physical and industrial re-establishment of disabled persons. The State Rehabilitation

Bureau in New Jersey, working with the Industrial Commission, is reported to have reduced the amount of settlements for total permanent disabilities in 90 per cent of the cases they have handled. Some improvements are to be made through the amendment of compensation acts. In Illinois, for example, prosthetic appliances are not required as a feature of medical treatment and they are rarely furnished. The case of Oliver Sleszynski, described at the beginning of this article, is an example. Many persons who are severely injured make settlements with their employers before the exact nature of their injuries is known. Following settlement, they fail to secure such surgical, medical, or physiotherapeutic treatment as may be needed to restore function in the injured part of the body. The Compensation Act, which now allows early settlement in many instances to the detriment of the injured person's physical rehabilitation, could be made to favor the man's restoration by providing that no final settlement shall be entered into until the employing organization has shown, by competent medical testimony, that no further improvement can be expected from medical or surgical treatment.

### Educational Agencies Contribute

Approximately one-half of all handicapping disabilities are found to have occurred before sixteen years of age. The problem of reconstruction for children is especially the concern of the physician, the school board and welfare agencies. Of 52,171 examinations of children between fourteen and sixteen years of age, for work certificates in Chicago last year, nearly one-third were found to have physical defects of such seriousness as to require withholding



Boy of twelve, born without arms, who learned to write by holding pencil between his cheek and right shoulder. Recently by a skillful operation he has been provided with artificial arms, and is developing talent as a cartoonist.

certificates. The following case is an example:

John, an Italian boy, came with his mother to procure a work certificate shortly after his fourteenth birthday. He was extremely thin, and had a decided outward curvature of the spine, presumably from an early tuberculous condition. The mother was prematurely aged and nearly blind from trachoma. The father and an older brother worked, but the family felt that John had now reached an age when he should contribute.

John was not allowed to work. He was fitted out with clothing and books and induced to return to school. The mother was sent where she would receive treatment for her eyes. Later in the year, when Arden Shore Camp was organized, John was sent there. He did not improve



much at first and a bursitis of the knee developed. His tonsils were removed, and he improved more rapidly. During the time while he was in the hospital, he wrote one of the vocational guidance staff a letter which indicated literary ability.

After John's physical condition had been built up he came home and was sent back to school. He thought he would like to become a printer, but learned that his handicap would probably bar him from this occupation. He was encouraged to go ahead in school, with the idea of becoming a proofreader, or of preparing for a secretarial position. A scholarship from a fund provided by the Vocational Supervision League was secured and John was returned to school.

However, the family persist in the idea that this fourteen year old cripple should contribute to the family purse.

Many defects discovered in later childhood have gone with little or no attention since infancy. Of 2,046 crippled children under 15 years of age included in the Cleveland survey, 68 per cent were found to have been disabled under 5 years of age.

In addition to the problem of proper medical attention, children with serious disabilities are handicapped through difficulty of securing standard education, school facilities being poorly adapted to their needs. In some instances they are backward mentally. In a study of 316 children in the Spaulding School for Cripples, Chicago, 84 per cent are found to be retarded, the average retardation of these being 2.5 grades.

The periodic examination of school children for physical defects, and the maintenance of a continuous record of all children from the time they enter school until they leave it, is an essential provision in getting at the problem of the disabled child. It is desirable also to maintain a complete list of all defective children not in school. The maintenance of special schools for cripples, such as the Spaulding School in Chicago, as a part of the regular school system, yet with facilities for nutritional, surgical, and physiotherapeutic treatment, is necessary if the physically defective child is to be given an equal chance with the able bodied. Of the same importance are special classes for the anemic, the blind and semi-blind, the deaf and hard of hearing, and children with defective speech, such as are authorized by law in Illinois. Under the British Education Act, boards of education are authorized under exceptional circumstances to make any provision, including board and lodging, "which they think best suited for the purpose of enabling . . . children to receive the benefit of efficient elementary education." Local education authorities are required to pay for physically defective children in suitable hospital schools, where they exist; and in case none have been established, to provide them before March, 1927. Local boards are, in addition, given supervision over the working conditions of children.

If the viewpoint of economic rehabilitation of the disabled person—man, woman or child—is maintained from the point of initial diagnosis to the point of ultimate adjustment at remunerative



Community Clinic for Crippled Children at Decatur, Illinois, conducted by the local chapter of the American Red Cross.

occupation, delays, discouragements and poverty are reduced.

A young man at 28 years of age was found to have been suffering from the results of infantile paralysis for six years. He had been supported during the time from the earnings of two younger sisters. He was housebound and could think of little profitable employment. In trying to find a cure he was under treatment of doctors of medicine, osteopaths chiropractors, spiritualism, baths, a "bone-setter," and "sure cures." After he had spent five hundred dollars, an appeal for financial aid to buy a violet ray outfit brought him to the attention of a visiting nurse. An orthopedic surgeon was called in and muscle training was given. With the help of braces and crutches he is expected to be able to walk and thus improve both his outlook on life and his opportunities for gainful employment.

This young man's difficulties seem to have been due somewhat to his poor choice of medical advice. Another example indicates that discouragement may arise also where advisers are numerous:

In 1915 John Sanderson suffered a contusion of the foot. He had been injured while employed as a laundry worker. During the following four years he was taken care of by five hospitals, two dispensaries and twenty-two doctors. The foot did not heal and a tuberculous ankle developed. The industrial concern sent Sanderson to three different hospitals and seven doctors. The man himself went to four doctors in search of relief. Various social agencies sent him to one hospital, to three dispensaries and to eight doctors. The man's condition is unimproved and he has lost confidence in agencies that seek to help him. His resources have been exhausted and his compensation has been reduced.

Had a plan of rehabilitation for John Sanderson been agreed upon five years ago, when he was injured, and had the idea of reconstruction been "sold" to him in a practical way, his subsequent history might have been different. What was

needed for his re-establishment was not so much a new type of service, as the concentration and effective use of existing facilities.

For the assistance of medical agencies and practitioners, and of welfare organizations in carrying through a plan of re-establishment of disabled persons, it may be found desirable to appoint aids, under the Rehabilitation Act, to keep in touch with individual cases. These workers would be prepared especially to deal with problems of vocational training and employment. They would cooperate with medical and social service staffs of hospitals and with the medical and employment departments of industrial concerns. For a limited number of cases it is suggested that a rehabilitation hospital be established at Chicago, as a part of the central group of hospitals under the joint supervision of the Department of Public Welfare and the University of Illinois.

## NOW COMES THE X-RAY AMBULANCE

THE efficacy of health service is largely a matter of the distribution of the attention, which accounts for the fact that the latest developments of science are effective only here and there, and even at best are employed spasmodically.

The great research centers maintain standards of service and employ methods of procedure quite impossible to utilize in more remote districts, so that the clinic and hospital of the city becomes the Mecca of all who suffer from complicated or obscure conditions.

But not all who need such service can travel, and even those not far removed from the best equipped clinic may in a crisis find it impossible to be transported to a point where x-ray diagnosis, for instance, can clear up an obscure condition.

Perhaps no service in the British armies was more effective in bringing about proper corrective measures without undue delay than the mobile x-ray units. The bones set so that approximation of the broken parts was accomplished directly under the eye instead of being left



International  
The x-ray ambulance makes it possible to take photographs at the home of a patient too ill to be moved. The service is directed by the Red Cross Society under the supervision of the Lady Theodora Davidson.

more or less to guess work without the aid of the ray, and, in the severe cases, prompt instead of delayed treatment, resulted in good end results in many cases that would have suffered more pain and greater deformity under other conditions.

It is inconceivable that methods found so efficacious, and withal so humane, during the war should fall into disuse and the war discoveries of science not be made effectual for the citizen populations of the world.

We are carrying nursing service direct to the people, and dietary management, and visiting housekeeping. The portable x-ray is a logical development of a public health consciousness that will not leave one stone unturned that can be made to contribute to the greatest service to the greatest number. Still further improvements are to be looked for in the way of new departures of this kind.

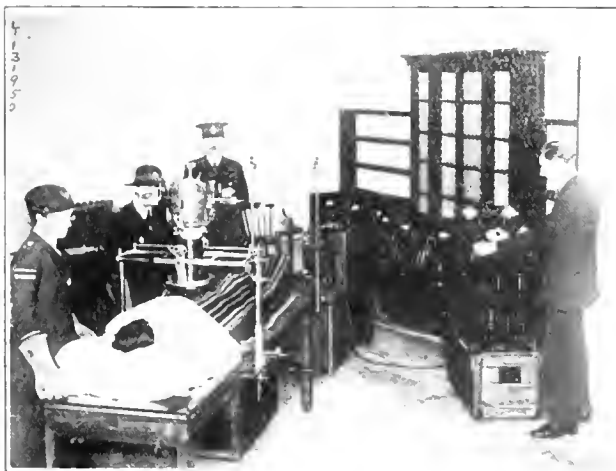
S. P. M.

## ACCIDENTS TO WORKING CHILDREN

In an article by Miss Lucile Eaves, director of research, Women's Education and Industrial Union, Boston, in the *American Child*, analysis is made of one thousand industrial accidents suffered by Massachusetts children fourteen and fifteen years old. In dealing with the causes of the accidents reported, Miss Eaves says, "The awkwardness of children of the adolescent age, particularly of the boys, proves that they have not learned to direct perfectly the activities of their own bodies, so their inability to control the additional forces represented by machines and tools is not surprising." The frequency of accidents to children, charged to horse play and fooling, or deliberate violation of safety regulations, raises questions about the possibility of making factories safe places of employment for immature and irresponsible young people.

## FINED FOR HOUSING RATS

Anyone in London discovered harboring a rat or a mouse in his house is liable to a penalty of £5, under a law recently enacted in Parliament. If the "offense" is continued, he may be fined £20. Health measures demand the extermination of rats, as they maintain an efficient transportation system for "black death" and other plague germs and constitute a real hazard against lives and property. A recent bulletin from Washington makes the statement that it keeps 200,000 men working full time to support the rat population in the United States.



International  
A civil mobile x-ray unit has been installed by the British Red Cross Society whereby the patient at home, too sick to be moved, may have the advantage of x-ray diagnosis. The wire lead, transmitting the electric power, is carried directly into the sick room.

# HYGIENE OF THE EYE

By JOHN GREEN, JR., M.D., St. Louis, Mo.

**I**N HIS treatise on "Preventive Ophthalmology" Parsons<sup>1</sup> says that the objects of preventive ophthalmology are:

(1) The prevention of damage to the individual: (a) prevention of damage to the eyes from accidents, deleterious radiations, defective illumination, organisms, etc.; and (b) prevention of damage to health from accidents, headaches, fatigue, etc.

He calls attention to the loss of time and money by preventable accidents to eyes. Workmen are still loath to wear goggles, which are now generally provided free of charge by employers, and suggests as a means of increasing their use that the latter be relieved of all liability if accidents occur when the workman is not wearing his goggles. "Safety first" propaganda and the efforts of welfare workers are needed to dissipate the suspicion of work people that preventive measures are not solely for their own benefit.

## Investigations Were Called For

He discusses the deleterious action of ultraviolet radiation on the eyes. Infra-red (heat rays) may also have a potent effect which is important in view of the high temperatures employed in many industries.

The amount, quality and distribution of light in schools, libraries, factories, etc., should be carefully regulated; at present such buildings are usually poorly illuminated.

Ophthalmologists should carry out investigations "in estimating the effects of errors of refraction, errors of muscle balance, defective illumination, and so on, on the fatigue of workers in the different processes of various industries."

The examination of the eyes of school children and testing should only be intrusted to qualified men, those who have had actual experience in clinics, etc., and, to this end, he suggests the establishment of ophthalmic centers in various parts of the country.

(2) The prevention of damage to other people: (a) Regulations for the prevention or transference of contagious diseases; (b) regulations for the Public Service, Navy, Army, air forces, mercantile marine, railways, motor industry, movies, etc.

Recently there has been formed the Council of British Ophthalmologists: men chosen by the representative ophthalmic organizations of the

United Kingdom. This body acts in an advisory capacity to the public services. The Council, in operation only a year, has issued a report on the lighting of test types, and on the teaching of ophthalmology to medical students and has been asked to appoint representatives to serve on a committee to assist the London County Council in dealing with the lighting of moving picture shows. Among the functions of the Council will be fixing standards of vision, color vision, fields of vision, vision under low illumination, and ability to judge distances with accuracy.

Parsons states that too little attention has been paid to good printing—its visibility, legibility, and eye saving characteristics. Erdman and Dodge, psychologists, Cohn and Javal have investigated the subject; but the sole practical outcome has been some improvement in school printers for young children. The world famed printers have been guided by canons of art and not by rules of service. We know little about the physiology and psychology of reading and writing, and the sooner we set to work to learn, the better it will be.

In the printing of music, the unit of visibility is the accidental sharp, flat, or natural. The violinist's notes should be larger because he has to read them twice as far away as the pianist.

In regard to compensation for disability, Parsons states that decisions are rendered in the courts resulting in wide variation in awards for practically identical disabilities. The vast majority of disabilities can be codified on a percentage basis.

## New Methods of Lighting

A new method of producing "artificial daylight" makes use of a colored and curiously patterned reflector for correcting the distribution of energy in the spectrum of a lamp. The distribution of colors was calculated on spectro-photometric measurements of opaque pigments made by means of Sir William Abney's color-patch apparatus. The reflector is designed to produce a daylight effect from a tungsten filament half-watt lamp. The inventor, Mr. L. C. Martin,<sup>2</sup> demonstrated his appliance at a meeting of the Illuminating Engineering Society and showed the difference between the corrected and the uncorrected light in the effect produced upon a number of colored materials. Under ordinary illuminants blue appears low in luminosity compared with red, but

1. Parsons, J. H.: *Preventive Ophthalmology*, Oxford Ophth. Cong., 1919, Trans. Ophth. Sec., United Kingdom, xxxix, 269.

2. Martin, L. C.: *Artificial Daylight*, Brit. J. Ophth., iv., 332.

with a lamp having the corrected reflector the two colors, blue and red, are not very far removed from one another in luminosity.

The problem of artificial daylight is one of importance in many industries. In the earlier methods transmission through tinted screens was employed. An apparatus, the result of the combined work of a physicist, Martin, an artist, Sheringham, and an expert on camouflage problems, Major Klein, and known as the "Sheringham daylight" has recently been perfected. It attempts to solve the problem by the use of carefully combined color reflectors. It is difficult to define daylight, on account of its great variability. Commenting on this point, the editor of the *Illuminating Engineer* for February, 1920, says: "In order that the whole subject may be placed upon a scientific footing, it appears essential that a standard of 'normal' daylight should be definite and the degree of accuracy with which 'artificial daylight' units for various purposes should approach this standard specified." He also points out the necessity for a standard white surface and a standard nomenclature of color-tints.

The work reported on by Luckiesh<sup>4</sup> was prompted by the recently developed opinion that eyeglasses, especially in the industries, should not transmit infra-red radiation. The data presented in this paper do not directly reach the root of the problem, but they are of considerable importance. Energy quantities and densities in the eye media are established and should aid the physiologist who is interested in the question. This paper is confined purely to the physical aspects of spectral energy distribution in illuminants, of the absorption by the eye media, of optical laws, of luminous efficiency of illuminants, etc. The best glass to keep out the short wave chemical rays that induce conjunctivitis, etc., while interfering least with vision is, according to Larsen,<sup>5</sup> yellow glass, (No. 23 Nitsche and Guenther scale). This absorbs 25 per cent of the 580 wave rays; 50 per cent of the 520 rays; and 85 per cent of the 460 rays. The yellow tint is comfortable and impairs vision very little. He adds that the macula is protected with yellow pigment in the retina, another physiological argument in favor of yellow glass.

There is a prevalent belief that the kerosene flame possesses advantages for the eye not had by other illuminants. A former paper by the authors, Ferree and Rand,<sup>6</sup> recounted results comparative of the effect of certain filament lamps on the power of the eye to sustain clear and comfortable seeing.

In the work of the present paper, the comparative testing was continued. Using Welsbach gas mantles of different proportions of ceria and thoria, the results obtained were again compared with those derived with the kerosene flame.

By changing the proportions of ceria and thoria in the Welsbach mantle, a light can be obtained with its dominant color ranging from blue green through green, yellowish green, clear yellow, and orange. The maximum candle power is obtained around 0.75 per cent ceria and 99.25 per cent thoria. The light from this mantle is an unsaturated yellowish green. With an increase in ceria the dominant color shifts towards that of the long wave lengths; with a decrease of ceria toward that of the short wave lengths. One table shows the tendency of the different illuminants to cause loss of visual efficiency; another gives a comparison of the tendency of the different illuminants to cause loss of visual efficiency or power to sustain clear seeing and to produce ocular discomfort. The paper is highly technical and cannot be satisfactorily abstracted.

### Protective Glasses

In an editorial in the *American Journal of Physiological Optics*<sup>7</sup> it is stated that recent investigations have shown that light neutral tints and shades of red and yellow glasses do not markedly influence the absorption of the infra-red, but that glasses which are strongly absorptive in the long wave length region of the visible spectrum are more pronounced and efficient absorbers of infra-red radiation.

Increased temperature decreases the transmission factor in every case except in light blue glass. Data are given by Coblentz and Emerson<sup>8</sup> to show that the infra-red rays (heat rays) emitted by a furnace heated to 1,000 degrees or 1,100 degrees C.: (1) about 99 per cent is obstructed by "gold plated" glasses; (2) about 95 per cent by sage green or bluish-green glasses; (3) about 60 to 80 per cent by black glasses; and (4) about 60 per cent by greenish yellow glasses. At higher temperatures these data would be somewhat different.

Berry<sup>9</sup> speaks of the proposed safety code requiring employees to furnish goggles and making it a condition of employment that an employee wear such goggles.

There are 200,000 eye accidents in the industries every year. Industrial processes in which protection is needed for the head or eyes of workers include chipping, riveting, babbitting, scaling,

3. Artificial Daylight, Brit. M. J., 1919, 720.

4. Luckiesh, M.: Infra-Red Radiant Energy and the Eye, Am. J. Physiol., 1919, 1, 383. Abst. J. A. M. A., LXXIV, 353.

5. Larsen, H.: Sun Glasses, Ugeskr. f. Læger, 1920, LXXXII, 700. Abst. J. A. M. A., 1920, LXXV, 282.

6. Ferree, C. E., and Rand, G.: Experiments on Eye with Gas Mantles of Different Compositions, Am. J. Ophthalm., III, 21.

7. Editorial: On Tinted and Colored Glass, Am. J. Physiol. Optics, 1920, I, 216.

8. Coblentz, W. W., and Emerson: Progress in Manufacture of Glass for Protecting Eyes from Injurious Radiations, J. Franklin Inst., LXX, 255.

9. Berry, G. L.: Saving Sight in the Industries, Med. Rev. of Rev., XXV, 652.

grinding, sandblasting, high temperature welding, open-hearth and blast furnace work, electrical operations, and processes involving harmful fumes. One may also note burns from caustics, fragments from mushroomed tools, and glass blowers' cataract.

Goggles should have non-corrosive frames which will withstand sterilization and must be submitted to a "drop" and "heat" test.

In his presidential address before the American Medical Association, April, 1920, Surgeon General Braisted<sup>10</sup> discussed "Causes of Eye Strain in Children." He notes that a large proportion of the text of school books is in fine print; much is set up in six point type. "No child of ten or under should have to study a book printed in anything smaller than twelve point lower case, or eight point capitals; and older children should not have to con by the hour a type finer than ten point. If fine print could be officially stigmatized as a menace to eyesight; if the federal government were to forbid the transmission through the mails of children's school books improperly printed, we would have a ready solution of the problem. Left to the example of the individual school or to the individual state, the correction of an evil of this kind will not be achieved for many, many years.

The strike of printers in 1919 compelled many magazines to suspend publication. Others, more resourceful, issued numbers printed directly from photo-tint plates from typewritten copy. Wuerdemann<sup>11</sup> noted in this copy a lessened legibility, largely due to the difficulty of instantaneous recognition of the word symbols, made up of letters. The easiest face of type to read is one in which the vertical lines are more accentuated than the horizontals; in ordinary type of the typewriter, the horizontal components are of about the same weight as the verticals. When magnified, the typewritten copy will be seen not to have the clear definition of the lead type print. If, however, clear copy of type to which we are accustomed be thus reproduced, a satisfactory easily read page may be made.

### Myopia and Education

A very interesting discussion of myopia and its relation to education took place at the 1919 meeting of the Ophthalmological Society of the United Kingdom. Harman<sup>12</sup> discussed children whose eyes are immature, defective, or blind.

(1) *Immature*: Strain, illness, or a toxic condition interferes with the functions of the eyes; in early years the instability of accommodation

and binocular vision is notorious; and this instability must extend to other functions of the eyes and to the fabric of the eye itself. In a young child "the eyes feel fatigue in proportion to the mental exertion needed to recognize the meaning of the object presented to the eye."

Set lessons in the infant's class are commendably brief in comparison to the time allotted to action, lessons, or games. The allotment of time has been made with a view to the supposed needs of the average child. A child, taken into the school at four—earlier than in the United States—does not have his ocular examination until seven. This is surely a most unscientific procedure. One might almost stigmatize it as inconceivable.

Harman examined under homatropin the eyes of 368 young children in breeding and nurture above the average. These were divided into:

#### Group I, or Average Eyes:

Emmetropes, or H less than 2D.

As less than .5D +H less than 2D.

Total, 236 = 65.1 per cent.

#### Group II, or Imperfect Eyes:

H over 2D.

As. less than .5D +H less than 2D.

H more than 2D with As.

Myopes.

Cataract cases.

Total, 126 = 34.9 per cent.

"This means that one in every three children is not fit to do ordinary school work under ordinary conditions." He concludes that our present methods of submitting infants to the work of school life without any attempt to ascertain their fitness for the work is wholly unscientific. He would grade young children according to sight as follows:

Grade I. Fit for the regular curriculum.

Grade II. For "easy treatment" as regards eye work and extended observation.

Grade III. For glasses and "easy treatment," i. e., using educational methods similar to methods employed for the semi-sighted.

(2) *Defective*.—In 1907 the first "Myope" classes were started. There are now twenty-one in London alone. The children in these classes show congenital defects in 7.02 per cent; damaged eyes from inflammation in 30.35 per cent; and myopia in 62.62 per cent.

The scheme of teaching is as follows: (1) Oral teaching with normal children. (2) Writing on blackboards with chalk, free arm fashion. "Printing" of books on large paper sheets, using rubber faced types. (3) Handicraft that will develop attention, method, and skill with the minimum use of the eyes or of muscular strain. Instruction

10. Braisted, W. C.: Cause of Eye Strain in Children in Relation to Education, J. A. M. A., lxxiv, 1207.

11. Wuerdemann, H. V.: Optical Aspects of Printing Magazines from Typewriter Copy, Am. J. Ophth., ii, 888.

12. Harman, N. B.: Eyesight and Education, Trans. Ophth. Soc., United Kingdom, xxxix, 78.

in the proper use of the eyes so as to cultivate a habit. Vision of 6 18 or 6 24, with correction, is needed. Those with 6 36 to 6 60 are better placed in the blind school.

(3) *The Blind*.—This class needs the cultivation of the social sense, which they can best secure by free intercourse with the mass of the people. For this reason Harman is opposed to residential schools for the blind. In London there are ten centers for the blind. To these schools the children travel daily. They live at home with their parents and normal kindred and play with normal children. At the age of thirteen, they go for four years to two residential schools where they learn a trade.

This is the ideal; it is a happy mean between educating the blind wholly with normal children and wholly in residential schools.

Blind children above fourteen are of all grades of capacity. At present they receive their trade training all in the school. The better children are delayed in their progress by the presence of those of poorer powers, and the latter are injured by the strain of the hopeless attempt to keep pace with their betters.

Butler<sup>13</sup> protests against debarring myopes of 2-3 D. from secondary schools, and asks "what right have oculists to say to the low myope that he shall not receive the best education obtainable?"

Butler doubts whether near work increases the degree of myopia. In his opinion the abolition of Gothic characters has had nothing to do with the diminution of myopia. Very high myopes with choroidal changes are more frequently found among the rural than the urban population. He points to the occurrence of high myopia—10 to 11 D.—in children two and three years old who have never looked at a book. He thinks that "until this matter of the causation of myopia has been put upon a scientific footing, there is no justification for governing a policy by it." If accommodation produces a rise of tension—as claimed by some on the basis of manometric experiments—this is a "benign" rise.

### Supervision of School Children

Sym<sup>14</sup> commends the progress that has been made in examining children's eyes in schools, but states that the work is not yet perfectly accomplished. Children are kept at tasks unsuited for them and others are forced to wear spectacles who would be better off without them. Education and civilization tend to increase the frequency of convergent strabismus and myopia. In the days

of our ancestors the myopic type could have no chance of perpetuation, whereas now it has. In a "state of nature" there is no myopia. Civilization does not produce myopia, but it suffers the myope to live and thrive. Most high myopia—15 to 25 D.—is not the result of school work and is more often found in laborers and rustics than among the literate. Sym divides myopia into three classes, as follows:

(1) Physiological: Fundus normal, no myopic crescent, vision full. In this class lenses are needless.

(2) Pathological: Vision 6 24 or less, staphyloma with wavering margin, choroidal degeneration, "speckling" about macula. Such a child will run up to 25 D. with vision reduced to counting fingers at ten feet. For such a case there is no means of prevention.

(3) Tending to become pathological: Myopia up to 3D; vision 6 12 to 6 9, narrow, ill defined crescent. He advocates mild outdoor exercise, such as golf or croquet. Full correction should be worn constantly. Sym is not inclined to correct indiscriminately hypermetropia or astigmatism in children, as low hypermetropia is apt to diminish with the growth of the eye, and there is also a change in the corneal curve tending to lessen or abolish astigmatism with the rule.

### Nursery Ophthalmic Hygiene

Clark<sup>15</sup> thinks the unilateral highly myopic eye is "abnormal" and should not be classed in any sense with ordinary errors of refraction.

Bad lighting often manufactures myopia. He has seen schools where the pupils had to face the light, so held their books close to the eyes and stooped over. A child of myopic parentage, under six, must not be taught to write; such a child should chalk on blackboard or slate at arm's length. He may also be given wooden blocks bearing the alphabet and numerals. By this "nursery ophthalmic hygiene" he hopes to prevent the onset of myopia.

Children should not sleep facing a window. Better methods of teaching, lectures, and diagrams would obviate prolonged perusal of texts and hence much unnecessary accommodative effort. "While the eye is soft, there should be more actual personal teaching and less near work and preparation from books."

Whitehead<sup>16</sup> points out that training with blackboards cannot be continued indefinitely. What is the proper time for myopic children to resume work in ordinary classes and begin to use ordinary books? He objects to block-playing,

13. Butler, H.: Eyesight and Education, Trans. Ophth. Soc., United Kingdom, xxxix, 90.

14. Sym, W. G.: Eyesight and Education, Trans. Ophth. Soc., United Kingdom, xxxix, 68.

15. Clark, E.: Myopia and Education, Trans. Ophth. Soc., United Kingdom, xxxix, 93.

16. Whitehead, A. L.: Eyesight and Education, Trans. Ophth. Soc., United Kingdom, xxxix, 39.



as stooping over them on the floor induces myopia. In many cases, myopia will cease to increase; such patients may resume work in ordinary schools. Many myopes will grow progressively worse despite all care.

"The routine in a myope school would do much to arrest the defect, and if it could be arrested up to the age of ten or eleven, the child could safely be left to go to ordinary schools."

Polock says that every child's eyes ought to be examined at least once. "Merely testing the visual acuity would not enable one to know which were the bad eyes; they must be seen and examined by one who had been especially trained in eye work."

In three myope classes during the past eight years, he had kept every myopic child under atropin, *sometimes for three years*. It was among these cases that he saw a certain diminution of myopia occurring.

Evans protests against the policy of putting myopes into the class of chronic invalids. Sudden increases in the degree of myopia come on, not after close work, but during critical periods of development or after illnesses, thus suggesting that the cause is constitutional.

Stack<sup>17</sup> advocates early examination to catch early visual defects.

Hay<sup>18</sup> advocates a standard of blackboard illumination in schools. In smoky cities artificial light is needed throughout many winter days. The blackboard should be *washed*, to insure adequate contrast with the chalk.

In criticism of a "leader" in a former issue of the *British Medical Journal*, Harman<sup>19</sup> states that school myopia "is a term of currency," implying a low degree of myopia, up to three or four diopeters. There are many conditions that go to the production of myopia, whether of low or high degree—heredity, congenital defect, illness, bad social conditions, and too much close eye work. He takes issue with the writer of the "leader," who denies the influence of the last.

"School myopes," as defined above, are not admitted to the myope classes which are reserved for children who are short sighted to a serious degree, whether by reason of high myopia, scarred eyes, or congenital defect. These children are not fitted to join in the normal curriculum and the 'myope' classes were established to fulfill the need of these seriously handicapped children."

Meade<sup>20</sup> states that in progressive myopia of school children, a temporary cessation of near work, coupled with Swedish drill exercise, brings

about improvement. On resuming near work the improvement is lost and there is a tendency for the myopia to progress. This leads to the view that near work at least aggravates the condition. As varicose veins and pulmonary tuberculosis are not congenital, there being in some individuals merely a "hereditary predisposition" to these troubles, environment and subsequent life history being the exciting factors; so with myopia.

### Ocular Hygiene

Morgan<sup>21</sup> strongly urges an examination under cycloplegia of every child's eyes and points out that a child may have 20/20 vision and yet have a latent hyperopia up to 4D. Pain, nervous disturbances and convergent squint may appear if the refraction is uncorrected. Then, too, myopia may be prevented by early correction of astigmatism. Another advantage of cycloplegic examination would be the early detection of intra-ocular disease.

Lockhart<sup>22</sup> gives certain rules of ocular hygiene which may be epitomized as follows: (1) work by a north light which falls over the left shoulder; (2) electric lights of high candle power hung in the ceiling and protected by frosted globes are the best artificial illuminants; (3) most people need glasses "to relieve their ocular muscles and visual brain centers of the constant and painful effort necessary to overcome the slight optical inequalities in the shape of their eyes," and not for the purpose of improving distant vision; (4) do not buy cheap tinted glasses; (5) eyes should be rested when suffering from sinusitis; (6) avoid overeating, too free indulgence in alcohol and tobacco; (7) cataract is to be avoided by general ocular hygiene.

### Ophthalmology and Child Hygiene

Newcomb<sup>23</sup> divides ophthalmological conditions which have a direct effect on the health and development of children into the following general groups: (1) congenital defects and hereditary constitutional diseases; (2) prenatal and post-natal traumatism and infections; (3) communicable ocular diseases; (4) ocular disease arising from malnutrition and arrested development; and (5) errors of refraction and anomalies of the extra-ocular muscles. The trachoma-infected child and all suspicious cases should be debarred from school. The assumption that the eye is normal because visual acuity is high is unjustifiable. Many children with high hyperopia have good

17. Stack, E. H.: Eyesight and Education, Trans. Ophth. Soc., United Kingdom, xxxix, 97.

18. Hay, P.: Eyesight and Education, Proper Illumination, Trans. Ophth. Soc., United Kingdom, xxxix, 94.

19. Harman, N. B.: School Myopia, Brit. M. J., 1919, 451.

20. Meade, J. N., and Wilson, J. W.: School Myopia, Brit. M. J., 1919, 616.

21. Morgan, A. D.: Importance of Children Having Their Eyes Examined Under Mydriasis Before Entering School, Virginia M. Monthly, July, 1920, 176.

22. Lockhart, R.: Ocular Hygiene, Kentucky M. J., 1920, xviii, 214.

23. Newcomb, J. R.: Relation of Ophthalmology to Child Hygiene, J. Indiana M. A., xiii, 77.

vision and may have no symptoms directly referable to the eyes or head. The nervous system in a very high percentage of cases presents the initial symptoms of ocular strain. The more frequent nervous manifestations are nervous excitability; irritability; restlessness when asleep; dreams of an unpleasant nature; contortions of the muscles of the face or eyelids; and, as a direct result of the state of turbulence of the entire nervous system, faulty deportment in school and at home.

General improvement following correction of errors of refraction is marked with proper functioning of various organs which have no direct connection with the eyes.

### Conservation of Vision

Two new pamphlets will shortly be added to the popular series on "Conservation of Vision" issued by the Committee on Conservation of Vision<sup>24</sup> of the American Medical Association: one on crossed eye and one on cataract. The Chairman of the Committee and the Secretary of the Council have held several conferences with a committee from the American Optical Association with a view to the inauguration of a campaign for the education of the public on conservation of vision and the detection and correction of errors of vision, especially among school children and industrial employees. This plan will be directed by a committee on which the Council and its Sub-Committee will be represented. Thomas discusses the inadequacy of sight for modern demands. His paper is rather discursive and touches on many topics not closely connected with the subject. Hogue<sup>25</sup> writes on "Conservation of Vision" and Wescott<sup>26</sup> on the "Care of the Eyes."

### Prevention of Blindness

An editorial<sup>27</sup> in the *Boston Medical and Surgical Journal* comments on the service of National Committee for the Prevention of Blindness. In five years the Committee has grown from sixty-five charter members to 2,280 members and donors. It has sponsored and secured the enactment of laws for the conservation of vision in eighteen states.

There has been a notable reduction in the number blinded from preventable disease. In forty-four schools and day classes for the blind, 105 of 622 new admissions were due to blindness from ophthalmia neonatorum. The percentage for this disease is 16.9, an increase over last year's re-

port of 2.2 per cent, but a marked decrease over five years ago. Blindness due to wood alcohol has increased greatly. Trachoma is under better control. Eye accidents are fewer. Follow-up work by special social service nurses in cases of eye troubles has proved to be of considerable value, inasmuch as many people, through ignorance or carelessness, neglect instructions or fail to keep in touch regularly with hospital clinics, and in consequence suffer deterioration or destruction of vision.

By means of stories, talks, slides, and moving pictures, the young people are being brought to a realization of what good vision means.

To conserve the vision of the rising generation, every child's eyes should be examined by an eye specialist on entering school, and once a year thereafter.

An editorial<sup>28</sup> in the *Journal of the Missouri State Medical Association* states that trachoma is increasing in Missouri and constitutes a very real danger.

Woodruff<sup>29</sup> discusses the creation of the Missouri Commission for the Blind, pensioning the helpless blind, ophthalmia neonatorum, etc.

Harris<sup>30</sup> notes the sudden increase in blindness from wood alcohol and agrees with Berry, who urges special legislation to prosecute and punish those who substitute this poison for alcoholic stimulants. Educational work is best carried on by lectures and press articles. Recently a staff of oculists has been appointed by the Missouri Commission for the Blind.

Black<sup>31</sup> gives a systematic review of the work for prevention and treatment of trachoma, and the military orders relative to the induction or rejection of registrants with trachoma. He also reviews the management of the trachomatous in Chinese and Egyptian labour companies abroad.

### Climate and Ocular Disease

Santos-Fernandez<sup>32</sup> states that a warm climate tends to diminish the number and seriousness of many ocular troubles, as hygienic rules can usually be followed with more ease.

In the public schools the illumination of the class rooms does not need to be increased; on the contrary, it is necessary to devise means to reduce the glare from the brilliant sunlight.

Retinal hyperesthesia with consequent asthenopia is common, due to the bright sunlight, especially among workers at the sea shore, sponge fisheries, and fishermen.

28. Prevention of Blindness in Missouri, J. Missouri M. A., xvi, 585.

29. Woodruff, F. E.: Prevention of Blindness in Missouri, J. Missouri M. A., 1920, xvii, 240.

30. Harris: Help Prevent Blindness, J. Missouri M. A., xvi, 393.

31. Black, N. M.: Prevention of Trachoma in Military Camps, Wisconsin M. J., 1920, xix, 5.

32. Santos-Fernandez: Prophylaxis of Ocular Diseases in School Children, Rev. Cubana de Oftal., i, 525.

24. Committee on Conservation of Vision, J. A. M. A., lxxiv, 1241.

25. Hogue, G. I.: Conservation of Vision, Wisconsin M. J., 1920, xviii, 361.

26. Wescott, C. D.: Care of the Eyes, Pacific Dental Gaz., 1920, xxvii, 464.

27. Service of National Committee for Prevention of Blindness, Boston M. & S. J., 1920, clxxii, 539.

# THE MONTH IN MEDICINE

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### THE FUTURE OF MEDICAL PRACTICE

COMMENT was made in the January issue of MODERN MEDICINE on the address of the late Prof. William T. Sedgwick delivered at the centennial celebration of the Medical College of the University of Cincinnati, this address having later been published as the leading article of *Public Health Reports*, January 28, 1921. The contribution merits additional comment, however, pointing as it does to new departures in medical practice, in what may reasonably be considered as adequate preparation for the members of the medical profession, and defining the line of cleavage between what constitutes clinical medicine and the field of public health.

The inadequacy of medical service generally and the fact that the best type of service is not available to the masses involve no invidious criticism of the practising physician, for it may safely be conceded that the ethics of the medical profession is of high standard and that it is as uniformly operative as can reasonably be demanded of any single group of men. The scientific training, mental habit, and the definite limitation of interest in the medical profession conduce to highly specialized activities and promote notably high objectives.

In such concentration of interest, however, there do arise the dangers of over-specialization and it becomes a problem to maintain in such specialized workers that degree of sustained interest in the less spectacular phases of medicine which will insure safety for all the people from all preventable maladies. High mortality rates are to be attributed, not to the rare and interesting diseases, but to the everyday practices of the people, to faulty food habits, to undue and prolonged fatigue, to improper working conditions, and to the more common infections that are easily guarded against, but which on the whole offer no absorbing interest to the scientific worker. Their

care and cure require wholesale measures of vigilance combined with the drudgery on the part of the physician in honest, even though it may be dull, routine work.

A case in point may be mentioned in a promising young physician of our acquaintance who is now doing post-graduate work, at the conclusion of which he purposes to seek another field. His present work is pressing and remunerative, but he feels the urge to find a niche where there are newer features and less routine, the tendency everywhere being for the younger and more progressive professional men to keep in close touch with the great centers of research. Undoubtedly out of such situations have developed the "group" idea, which frees a man from routine and permits him to follow the lines of his special interests. It relegates to the social or psychiatric worker the task of filling in the gaps, and under good organizations effects a well rounded service. Let us not deceive ourselves into thinking that altruistic motives, social consciousness or anything other than the dynamic energy of individual interest in his work will serve to keep the physician or anyone else consistently at an arduous task. One phase of the problem, then, is the manifest necessity of devising some means of bringing the isolated physician and general practitioner into essential and continuous contact with the profession as a whole.

The real remedy, however, would seem to lie in the direction indicated by Professor Sedgwick in a system of education that would provide a line of cleavage as soon as the fundamentals of medicine are acquired whereby, on the one hand, the school would produce our surgeons and internists and, on the other, the needed human engineers. Men are needed everywhere for public health work who can bring to their office the scientific training plus epidemiology, sociology, psychiatry, a knowledge of vital statistics, and a faculty for organization. Some

source must be provided for the training of large numbers of such workers if this important domain of medicine is not to be usurped by a mere police power or by the sanitary engineer.

The procedure proposed by Professor Sedgwick would provide the sort of background for an interest in the wider aspects of human welfare which would put public health work on the high ethical basis of an exact science, and the initiative of the individual medical practitioner would in no way be jeopardized. Some such compromise between individual and social needs must be effected. Nations rise and fall on the manner in which such adjustments are made.

S. P. M.

## SURGICAL TREATMENT OF PERNICIOUS ANEMIA

RECENT contributions on the surgical treatment of pernicious anemia show an interesting concurrence of opinions. The conclusions reached by the great majority of authors are as follows: Towards the cure of pernicious anemia surgery offers no more than medicine. As far as the alleviation of symptoms is concerned, it is generally agreed that transfusion may hasten a remission. Splenectomy is of doubtful value.

These conclusions have been reached after much work and many trials. Blood transfusion had been enthusiastically advanced by many as a powerful weapon against pernicious anemia. By some, at first, it was vaunted as a cure. Later, when it was found that the early claims were not substantiated, many were willing to put this procedure into the discard. Splenectomy, too, when first proposed, was looked upon as a possible cure, but at present most writers feel that the results do not justify the operative risk.

Bloomfield<sup>1</sup> claims that blood transfusion performed at a time when the patient was not refractory brought on a remission in about one-half the cases. Following transfusion, the number of red cells and the hemoglobin could be brought to a higher level than in the untransfused cases. He compares the results in cases treated medically, that is with rest, diet, arsenic, etc., with those treated surgically. He answers the question whether or not transfusion can help tide over a severe relapse with the following figures: Of 363 patients treated in the Johns Hopkins Hospital, 16 per cent died in the hospital; of 31 patients who were transfused, 19 per cent died; of 332 not transfused, 15.5 per cent died in the hospital. He records a series of 57 cases; of 26 transfused patients, 23 per cent died; of the 31 not transfused, 23 per cent died. In other words, it would appear that blood transfusion does not tend to reduce mortality. Bloomfield is dubious regarding the value of splenectomy. Blood transfusions are not "held" better following splenectomy. Central nervous system symptoms are benefited neither by splenectomy nor transfusion. He quotes Ottenberg and Libman as saying that transfusion leads to remission in about half of the cases.

Anders<sup>2</sup> concurs with Kimpton that transfusion offers more than any other form of treatment and that the results of splenectomy, either with or without transfusion, are no better than those obtained by transfusion alone. He does not believe that the operation of splenectomy is warranted by the results. Anders believes in early transfusions, a conclusion reached after a study of 450 cases reported in recent literature. He claims that transfusions initiate prompt remissions in 56 per cent of

cases. He quotes Weber<sup>3</sup> and Hurter<sup>4</sup> as advocating repeated small transfusions.

Lindeman<sup>5</sup> states that one of the main factors in producing the symptoms in pernicious anemia is the very low blood volume, and he prefers large transfusions.

Graham<sup>6</sup> and Schaff<sup>7</sup> claim that blood transfusion in pernicious anemia has a beneficial action but no curative value. Carr<sup>8</sup> agrees that transfusion does help, but reminds the reader that accidents occasionally occur during or after the procedure.

Griffin, H. Z., and Szlapka<sup>9</sup> have recorded statistics of 50 cases of splenectomy for pernicious anemia, operated upon more than three years ago. They feel that splenectomy has prolonged life in at least 20 per cent of the cases. The operative mortality was 6 per cent—that is, 6 per cent of the 50 cases died in the hospital; 21.3 per cent of those who recovered from the operation lived three years or longer; 10.6 per cent are still alive, more than than four and one-fourth years after operation. There is no way of telling prior to operation, from the condition of the patient, his previous history, etc., whether or not he will respond favorably to splenectomy; however, the type of case in which there is evidence of active hemolysis seems to show most marked immediate improvement. These authors feel that splenectomy acts rather favorably than otherwise in cases with central nervous system symptoms. Of the five cases living more than three years after splenectomy, two cases had relapses and transfusions, the others stayed well. In Griffin and Szlapka's cases splenectomy was constantly followed by an immediate remission. Regarding foci of infection, they say, "while we still advise the removal of septic foci, believing that they may well have a physiologic and possibly an etiologic relation to pernicious anemia, we have been gradually forced to some doubt as to their grave importance in the stage of pernicious anemia in which our patients present themselves for examination."

Sir Berkley Moynihan,<sup>10</sup> in a recent article entitled the "Surgery of the Spleen," read before the Royal College of Surgeons, under the subheading of pernicious anemia, presents the statistics from the Mayo Clinic, as quoted above, but is rather non-committal concerning the value of splenectomy. He writes, "In the first place, it cannot be claimed, and is not claimed, that any patient has been cured of his disease. The risks run in undergoing the operation are small, but not so insignificant that they can be ignored. A few lives are sacrificed. All the patients who survive are not benefited, but in the majority a degree of improvement results and a prolongation of life in greater comfort, with increased zest, can be recorded." In the conclusion of the article, referring to those diseases of the hemopoietic system associated especially by clinicians with predominating splenic pathology, he states, "Instead of searching only for the existence of this or that splenic disease, an inquiry should be directed to the determination of the functional capacity of all the various organs likely to be deranged. . . . It may be that splenectomy in any of those diseases will remove the obvious culmination of the morbid process and thus bring about 'a cure' of the disease or an arrest of its development;

3. Weber: *Deutsch. Arch. f. klin. Med.*, 1909, xxvii, 165.

4. Hurter: *Med. Klin.*, 1911, No. 12.

5. Lindeman, E. E.: *J. A. M. A.*, 1918, lxx, 1297.

6. Graham, J. M.: *Edinburgh M. J.*, 1920, xxiv, No. 5, p. 282.

7. William Wood & Co., New York, 1920.

8. Carr: *Am. J. M. Sc.*, 1920, clx, No. 5.

9. Griffin, H. Z., and Szlapka: *J. A. M. A.*, 1921, lxxvi, No. 5, p. 290.

10. Moynihan, Sir Berkeley: *Surgery of the Spleen*, *Lancet*, Lond., 1921, cc, No. 5082, January 22.

11. Da Costa: *Modern Surgery*, S. B. Saunders Company, 1919.

12. Hirschfeld, Eppinger, u. Ranzi: in *Encyclopedia f. klin. Med.*, viii.

1. Bloomfield, A. L.: *Johns Hopkins Hosp. Bull.*, 1918, xxix, 3271.  
2. Anders, J. M.: *Am. J. M. Sc.*, 1919, clviii, 639.

but it does not by any means follow that all the other related parts are thereby caused to return to their normal state."

Da Costa<sup>11</sup> states that primary pernicious anemia is probably due to a toxin which is intensified by splenic

action, hence splenectomy may be done. It produces at least great temporary improvement.

Ranzi,<sup>12</sup> writing from von Eiselsberg clinic, claims that splenectomy is not a cure for pernicious anemia.

R. B. B.

## THE ETIOLOGY OF HYPERTRICHOSIS—A REVIEW OF THE LITERATURE

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A VERY casual reading of the literature on hypertrichosis for the past ten years reveals a striking variety of opinions and beliefs concerning its etiologic factors. It was with the object of summarizing these apparent discrepancies that this review was undertaken.

Freshwater<sup>23</sup> defines the condition as "an increase of hair, as regards either region, degree, age or sex." He distinguishes two general types (a) congenital and (b) acquired. It is not the intention of this paper to treat of the former, which includes such conditions as hairy moles, the hairiness accompanying spina bifida, etc.

### Factors in Causation

According to McEwen,<sup>61</sup> practically all cases of hypertrichosis have in their causation one or more of the following factors.

(1) Heredity he cites as the most frequent cause, and quotes certain racial tendencies and the fact that it is often found among members of the same family. That heredity bears an important part is also emphasized by Freshwater, while Weber<sup>91</sup> stresses the "Simian type" as an example of "degenerative" reversion.

(2) Ill chosen treatment, although of secondary significance, often becomes a very important factor in severe types, due largely to the commercial beauty parlor.

(3) The condition may be due to antecedent inflammatory dermatoses, such as are often seen following prolonged and severe acne, particularly facial. In this group, according to Freshwater, may well be placed those cases occurring after prolonged applications of irritants, such as sinapisms.

(4) A group not emphasized by McEwen is the incidence among mental defectives and insane patients noted by Bainbridge<sup>1</sup> and Freshwater, although Ewart<sup>26</sup> points out that in this latter class certain other factors—the endocrine glands—are primary in the causation of increased hair growth.

(5) By far the greatest amount of interest has been focused on those cases ascribed to disturbances of function of certain of the endocrinous glands. McEwen<sup>61</sup> adds: "The glands which have been proved experimentally to be related to the pilary system are the thyroid, hypophysis, the suprarenals, and the gonads;" but the literature also contains many references to the pineal, thymus, and parathyroid glands, which factors will now be reviewed seriatim.

### Thyroid Exerts an Influence

According to Root,<sup>76</sup> "the only diseases which can, with assurance, be attributed to an absence of or derangement of function with the ductless glands, are those referable to the thyroid."

That this gland has a limited but definite effect on the hair is emphasized by Leopold-Levi:<sup>75</sup> "Slight symptoms

of hyperthyroidism . . . constitute the prevailing characteristics of Grave's disease," among which he includes "hypertrichosis, more particularly of the eyebrow," and this sign is also quoted by Stewart.<sup>83</sup> McEwen<sup>61</sup> inclines to Leopold-Levi's theory, that "the thyroid has an essential action on the hair growth of the scalp, the eyebrows, and the eyelashes." So, too, hypertrichosis is mentioned among the symptoms of slight hyperthyroidism, as given by Reuben,<sup>75</sup> while Granger<sup>44</sup> comments on the fact that in pregnancy, where a physiologic thyroid enlargement occurs, the hair may become fuller and thicker.

Conversely, in thyroid deficiency, Cobb<sup>17</sup> believes that the "eyebrow sign" is of considerable diagnostic significance. There is a sparseness of the outer third of each eyebrow with a scarceness and partial falling out of the whole eyebrow." That hirsute derangements are important in the diagnosis of hypothyroidism is asserted by Ewart,<sup>26</sup> Falta,<sup>28</sup> Hertoghe,<sup>66</sup> Leopold-Levi,<sup>75</sup> MacLeod,<sup>79</sup> Reuben,<sup>75</sup> and others.

It has been shown experimentally by Paton<sup>72</sup> that in animals after thyroidectomy, there is a decreased growth of hair, particularly in the younger individuals, although it has not been proved whether this is due to the loss of a specific thyroid effect on hair growth, or whether it involves merely a lowered general metabolism. Of much practical value is the demonstration that in hypothyroid conditions thyroid medication causes a growth of hair, as in the cases cited by Hertoghe,<sup>66</sup> MacLeod<sup>79</sup> and Sharp.<sup>73</sup>

However, there seems to be some variance of opinion regarding the result of thyroid states on pilary growth, for Gordinier<sup>42</sup> and Soble<sup>81</sup> claim that in hyperthyroidism hirsuties is absent, while Stewart,<sup>83</sup> quoting Walsh, states that in many cases of exophthalmic goiter there is "a band of alopecia at the frontal end of the scalp."

This gland has been studied by observations after experimental and therapeutic partial or total removal, by clinical data on presumed cases of diminished or increased secretion, and by the administration of the gland either *in toto* or of one of its lobes.

That the hypophysis is very much concerned with the growth of hair is the opinion of Bandler,<sup>6</sup> who believes furthermore that the anterior lobe "is more a male than a female gland, and the posterior lobe is more a female than a male gland." Cushing<sup>59</sup> is more conservative in his statements, concluding that inasmuch as hypertrichosis has also been described in connection with lesions of other glands, "it is impossible to speak with any degree of assurance of this or that gland as primarily at fault;" while MacLeod,<sup>79</sup> too, is uncertain as to the relation of the pituitary gland to the skin. That the pituitary undoubtedly functions early in life has been proved experimentally by McCord,<sup>64</sup> who found the active principle in eight month fetuses.

Cushing<sup>59</sup> and Crowe, Cushing, and Homans<sup>18</sup> found that

after partial removal of the anterior lobe in puppies, hypotrichosis supervened, together with persistence of infantilism, and these results were confirmed by Aschner,<sup>2</sup> and Benedict and Homans.<sup>12</sup>

The syndrome known as *dystrophia adiposo genitalis*, first accurately described by Fröhlich,<sup>13</sup> is accompanied by a hypotrichosis. Climenko and Strauss<sup>16</sup> conclude that the eunuchoid is "a product of deficiency in the adjustment" of the endocrine glands, but note that the pituitary is often involved.

Stephenson<sup>12</sup> reported a case on whom he made the diagnosis of "dyspituitarism," in a sixteen year old girl, with bilateral simple optic atrophy, temporal hemianopia, x-ray evidence of enlargement of the sella turcica, and no pubic hair; while Falta<sup>28</sup> noted the disappearance of the pubic and axillary hair in hypophyseal tumor and ascribed the cause to hypofunction of the hypophysis, pointing out that removal of enough of the tumor to relieve pressure on the still healthy part of the gland caused the axillary hair to grow again, as in two cases reported by von Eiselberg. This is in accord with the findings of Cushing and Goetsch<sup>21</sup> that retrogressive changes on the part of the secondary sex characters occur if the hypopituitarism affects adults, and Reuben<sup>22</sup> attributes this to a deficiency of the posterior lobe.

Contrary to these observations are the views expressed in cases reported by Jona<sup>10</sup> and Moleen,<sup>16</sup> in which the occurrence of hypertrichosis was ascribed by them to a pituitary insufficiency, while Cobb<sup>17</sup> and Falta<sup>19</sup> state that in *Dystrophia adiposo genitalis* there is frequently an abundant development of the hair on the head, and the latter author often observed in these eunuchoids lanugo hairs on the face, particularly in front of the ears and on the skin and upper lip, but no mustache or beard, little or no axillary hair, and but few on the mons veneris.

The experiences of Harrower<sup>14</sup> and Reuben<sup>22</sup> agree with that of Cushing,<sup>10</sup> who described many instances of hypertrichosis accompanying hyperpituitarism, while Goetsch<sup>19</sup> modifies this by limiting the cases to those in which the hypophyseal overactivity antedates normal adolescence.

Many writers concur that hypertrichosis frequently ensues in acromegaly (Cobb,<sup>17</sup> MacLeod<sup>19</sup>), particularly in earlier stages or in exacerbations of the disease, according to Walker,<sup>16</sup> but Paton<sup>12</sup> quotes Marie's investigations as demonstrating that many giants have a poor growth of hair. The association is thus expressed by Falta:<sup>19</sup> "In many cases of acromegaly, there occurs both in men and women abnormally abundant hairiness. In women the hairiness may assume quite the masculine type. The growth of hair on the head is often remarkably dense and the individual hairs are thick. In the course of the disease abnormal hair growth occurs on the trunk and extremities. Often too, the eyebrows become bushy."

### Results of Pituitary Feeding

The most interesting pituitary feeding experiments have been performed by Goetsch,<sup>28</sup> who found that rats fed with anterior lobe developed coarser, thicker hair than controls. The posterior lobe had no such effect, and he concludes that the anterior lobe "has a stimulating effect upon the growth of the animal and upon the sexual development and activity. Posterior lobe extract, when thus given, has a retarding influence." Haynes<sup>14</sup> reported a case of a girl to whom the *pars intermedia* was administered, followed by normal development, growth of pubic hair, etc., but this may simply have been due to the usual onset of puberty.

The literature of recent years is replete with references to the relation of the suprarenal cortex to hair growth and the belief is apparently gaining that this gland is of great importance in the causation of hypertrichosis, either by direct stimulation or by a secondary action on other endocrine organs.

Falta<sup>19</sup> believes that very probably the heterosexual hairiness of women can be referred to a hyperfunction of the adrenal cortex, and suggests that there is the same cause for the virile type of hairiness observed in acromegalic women or even in normal women during pregnancy, inasmuch as hyperplasia of the adrenal cortex is observed in both conditions. He states, furthermore, that the cortex exerts "an important trophic influence on a very important sexual character, namely the hairiness," and quotes Glynn as corroborating this opinion. Vincent,<sup>28</sup> too, concurs in this observation, but calls attention to the fact that most of the evidence is of a clinical nature. He disagrees with Halban's explanation that the "*Hypertrichosis gravidatis*" may be ascribed to a protective action of the placenta, and explains the tendency of any facial or body hair in the pregnant woman to increase in amount, as due to enlargement of the adrenals.

While assenting to the views expressed by Falta and Vincent, MacLeod<sup>19</sup> has also noted the converse—that in connection with defective adrenals there is a disappearance of the pubic hair and non-development of the genital organs.

Apert<sup>1</sup> has given the name "Hirsutism" to a symptom complex associated with hypertrophy or tumor of the adrenals and this classification has also been adopted by Barker.<sup>7</sup> They divide the cases into three types depending on the development of the patient when the hyperfunction occurs: (a) Embryonal period: here the condition of pseudo-hermaphroditism is prone to develop.

(b) Childhood. The child matures too soon (*pubertas praecox*), with growth of pubic and axillary hair, menses, and adolescent psyche. (c) Period of sex constancy. The body may become slowly or quickly covered with abundant growth of hair (hirsutism), and in the female there may also occur the growth of a beard, large clitoris, deep voice, and other characters of virilism.

Apert claims that in all these cases adrenal tumors develop, although their site may be elsewhere in the abdomen in such locations as the kidney, ovary, testis, accessory adrenals; but Herzog<sup>18</sup> did not find tumors in all of his cases.

Bell<sup>11</sup> has made the important observation that there is no record of a suprarenal lesion producing changes in the secondary sexual characters in a woman after the menopause, although frequently "after this period of life the characteristics may normally incline towards the masculine type." He explains this latter anomaly "by the fact that sex, as such, has ceased to exist and that, although the withdrawal of certain feminine functions and characteristics may lead to the latent masculinity developing to a slight extent, no further sex demonstration can be aroused, even though the masculine-producing organs be disturbed."

Gallais<sup>26</sup> insists that in suprarenal tumors, particularly hypernephromas, the progressive development of hypertrichosis of the masculine type in young individuals is absolutely constant, to which Lucien and Parisot<sup>27</sup> in general agree, although they ascribe some cases to adrenal hypertrophy. Jump, Beates, and Babcock<sup>21</sup> are emphatic in their conclusion that in a given case, particularly if a girl in whom there is development of the male characters and a lessening of the female characters, "there is presump-



tive evidence that there is a hypernephroma of the adrenal cortex."

### Adrenal Hyperplasia and Sex Characters

A somewhat more conservative attitude is assumed by Glynn,<sup>37</sup> who finds that in females adrenal hyperplasia is associated with diminution of female characters and with the development of male characters, and that premature development of sex characters in the male may be associated with tumors of the cortex.

According to Strauch,<sup>34</sup> adrenal tumors effect "merely a hastening influence on the development of the secondary sexual characteristics, causing also an excessive growth of the body," and these tumors are five times more frequent in the female than in the male. McCord<sup>34</sup> has shown that the active principle of the gland may make its presence felt very early, having been found in six month fetuses. Ewart<sup>36</sup> has stressed the frequency with which insane patients, particularly in adolescent life, develop hypertrichosis, and he expresses the belief that the adrenals are an important factor in its causation.

There are numerous cases in the literature of precocious sexual development associated with suprarenal tumor. Jump, Beates, and Babcock<sup>4</sup> in publishing a case, review seventeen previously reported cases in children, of whom fourteen were girls and four boys. There was overgrowth of pubic hair in all, facial hair in fourteen, and axillary hair in five. Of the eighteen cases all died before they were sixteen years old. In twenty-one cases of sexual precocity, Neurath<sup>70</sup> found adrenal neoplasms in ten or eleven. Bulloch and Sequeira<sup>17</sup> reported tumors of the adrenals in ten patients, of whom two were boys and eight were girls. Tuffier,<sup>36</sup> in reviewing hypertrichosis in infants, finds the signs are of remarkable constancy, with hairiness of the masculine type as the most common symptom, occurring in thirty out of thirty-two cases. He reports a number of instances, and more have been described by Askanazy,<sup>3</sup> Baldwin,<sup>5</sup> Cobb,<sup>17</sup> Elliott,<sup>23</sup> Thumin,<sup>51</sup> and others.

The frequency with which pseudohermaphroditism, particularly of the female type, is associated with hyperplasia of the adrenal gland or accessory adrenals, is suggested by Vincent<sup>53</sup> as "illustrating the tendency of the gland to be associated with the appearance of male characters in the female." Herzog<sup>18</sup> found adrenal hypertrophy in thirteen cases of pseudohermaphroditism and similar instances have been reported by Fibiger<sup>31</sup> and by Quinby.<sup>74</sup> In a well-written article, McAuliffe<sup>72</sup> expresses the belief that the fundamental cause leading to these marked variations in sex characteristics is a disturbed pluriglandular equilibrium, but assumes that the suprarenal is the gland principally concerned, then the pineal gland, hypophysis ovary, thymus, and thyroid, in order of their importance.

### Gonads and Secondary Sex Characters

That the gonads are intimately associated with the secondary sex characters has been recognized for centuries in those countries where castration of the human male, and of various domestic animals, has been practised, but following the experimental work of recent years, the relation has assumed a new interest and importance. Although much light has been shed upon some of the processes involved, that many divergent opinions exist may be judged from the following assertions.

The view of Vincent<sup>53</sup> that "secondary male characters are normally present in a latent form in the female, and the ovaries exert an inhibitory influence over their development," has been maintained by Paton,<sup>72</sup> Goldschmidt,<sup>60</sup> Goodale,<sup>41</sup> and others. This has been demonstrated very clearly in an interesting article by Goldschmidt, who

points out the fact that castration of the female birds causes the assumption of the characters of the male sex, and also that the old female birds often assume the cock feathering. Corroboration of these conclusions is furnished by some pheasant breeding experiments of Smith and Thomas,<sup>80</sup> who found that ovarian degeneration is accompanied in every case by the assumption of some degree of male plumage, and to a marked extent in most cases. They believe that they "are warranted in concluding that there is an organic correlation between plumage and ovary," and that to have normal female plumage a normally functioning ovary is necessary.

In a comprehensive monograph by Goodale,<sup>41</sup> reviewed by Morgan,<sup>9</sup> the conclusion is reached that there is a specific relation between the gonads and the secondary sex characters, and a very close adjustment of the secretion of the ovaries to the characters it modifies, inasmuch as male characters produced in a given female are like those of the corresponding male. The author contends that this secretion must be relatively simple, for, if it were of complex nature, one substance producing each effect involved, such close coordination as actually obtains could hardly be anticipated.

For the production of secondary characters of the opposite sex it is not merely sufficient that the ovaries be absent, according to Bond,<sup>13</sup> but the presence of male sex gland elements—the stimulating factor—is essential, and, conversely as stated above, full male characters may be assumed to be inherited by both sexes, but in the female these characters are normally held in check by an ovarian secretion (Goodale,<sup>41</sup> Loeb,<sup>36</sup> Paton<sup>72</sup>). Much weight is given these views by the observation of Vincent<sup>53</sup> that following castration of the male there is never reversion to a type resembling the female, Dutoit<sup>24</sup> even mentioning hypertrichosis sometimes occurring after castration; on the other hand Kerwin<sup>72</sup> maintains that such male features as facial hair, or change in voice, never occur after oöphorectomy, but that "such ideas have been acquired by reasoning from a reversed analogy to eunuchs." Ewart<sup>36</sup> further points out that the secretions or lack of secretions of the ovary cannot alone be responsible for hypertrichosis, for there are comparatively few women who develop a hairy overgrowth at the menopause. Quite in line with these assumptions are the observations by Goetsch<sup>38</sup> in feeding rats with ovarian extract, that corpus luteum "has a stimulating influence upon the female, and a retarding influence upon the male sexual development."

### Effects of Hormones

La Mer<sup>54</sup> is very enthusiastic over the work of Tandler and Kellar, and of Lillie, on the freemartin, in which, owing to an anastomosis of blood vessels, the female fetus receives the hormones of the male fetus. The effects on the female vary according to the period of fetal life at which this juncture occurs: (1) if late in fetal life, male secondary sex characters are displayed, and sterile ovaries are produced; (2) if earlier, testicular tissue actually is found in the ovaries; and (3) the author presumes that in anastomoses occurring prior to ovarian differentiation, there may be a complete sex reversal. However, Goldschmidt<sup>60</sup> views these factors from a different angle, contending that the determinants of sex characters are distributed by means of the chromosomes.

Blanchard<sup>19</sup> takes decided exception to the beliefs of Apert,<sup>1</sup> Gallais,<sup>35</sup> Tuffier,<sup>36</sup> and others who claim that the cause of hirsutism and virilism is due to lesions of the adrenal, and cites examples of virilism in many birds and mammals, furthermore stating that the ovary is the only

cause for this inversion of sexual characters in the female, as is the testis in the male. He concludes that a lesion or atrophy of the ovary is the cause of virilism, and his point of view is shared by Marie,<sup>60</sup> who considers that virility or femininity is always due to modification of function of the genital glands. It is essentially the attitude of Herzog<sup>18</sup> that sexual precocity is due either to an increased irritability or to a cessation of inhibition of the gonads; and Shoemaker,<sup>19</sup> while conceding the influence of the hypophysis, pineal, and adrenals, upon the testis, asserts that the internal secretion of the gonad is responsible for hair growth.

The foregoing summarizes the prevalent views assuming changes in the secondary sex characters as originating in the gonads or, as Herzog states it "hypergenitalism;" but some investigators claim other causative factors. Thus Exner<sup>21</sup> believes increased activity of the anterior lobe of the pituitary either inhibits this function or directly causes such changes as increased amount of hair, and Barker<sup>22</sup> suggests that, while hyperactivity of the gonads exists in cases of *pubertas praecox*, pathological processes in other endocrine glands—pineal, adrenal cortex, etc.—seem to be the stimulating factor. However to Frank<sup>23</sup> it is clear, that in the female "no matter what the origin of the stimulation or depression may be, the symptoms produced are identical with symptoms arising from primary stimulation or depression of ovarian function"; and Bandler,<sup>6</sup> too, finds that the testis is responsible for the characteristic male qualities, both by its own action and by its stimulation of the adrenals, pineal, and hypophysis.

McEwen<sup>61</sup> quotes Leopold-Levi as affirming that "the ovaries and testicles have an essential action on the hair growth of the pubic and axillary regions. The testicles, in addition, have a direct action on the hair of the body, the beard, and the upper lip. The hypophysis and adrenals indirectly through the testicles influence the body hair, exclusive of the scalp region, the eyebrows, and the eyelashes." There is general accord that the rôle of the gonads in the causation of secondary sex characters is due to the interstitial, lipin-rich cells of the testis, and to the interstitial or oögenic cells of the ovary (Bandler,<sup>6</sup> Blanchard,<sup>1</sup> Marine,<sup>61</sup> and Paton<sup>12</sup>).

Numerous instances of the relation of the sex glands to secondary characteristics have been reported in the literature. In twenty cases of hypertrichosis coming to operation or autopsy, Neurath<sup>10</sup> found five who presented neoplasms of the sexual organs. Flata<sup>11</sup> describes a number of cases associated with tumors of the testes or ovaries. After removal of the tumor the hypertrichosis either retrogressed or disappeared. The patient of Sacchi, as quoted by Herzog<sup>18</sup> and Paton<sup>12</sup> is a typical example: A boy of nine and one-half had displayed for four years an enormous growth of bones, great muscular development, deep voice, long beard, and pubic hair. An alveolar carcinoma was removed from his left testis, and subsequently his secondary sex characteristics became those of a normal boy of his age. Other interesting material has been presented by Cobb,<sup>17</sup> Herzog,<sup>18</sup> Macnell,<sup>16</sup> Sailer,<sup>17</sup> Shoemaker,<sup>19</sup> and others.

### Pineal Tumors and Hair Growth

Many authors have found in young subjects with pineal tumors unusual hair growth and premature sexual and genital development. The presumption is, according to Vincent,<sup>57</sup> that these changes are due to pineal hypofunction, the pathogenesis depending upon a destructive lesion or growth of the pineal body. Foa found marked development of the testes and secondary sex characters in pineal-ectomized cocks, and Herzog<sup>18</sup> therefore concludes that the

pineal gland inhibits the development of the testes and directly or indirectly the development of secondary sex characters, at least in males. Dercum<sup>10</sup> is one of the writers who also incline to this opinion, while Reuben<sup>15</sup> believes that pineal enlargement cause increased genital hair and general body hirsuties, and this latter view finds some substantiation in the feeding experiments of McCord,<sup>16</sup> in which by administering pineal substance by mouth or by injection into animals, precocity of development was obtained.

However, these views have been warmly assailed by numerous investigators, such as Dandy,<sup>12</sup> who after removing the pineal of animals, "observed no sexual precocity or indolence, no adiposity or emaciation, no somatic or mental precocity or retardation." He maintains that the pineal has no important, active endocrine function, and is not essential to life or well being; and Park<sup>11</sup> in reviewing an extensive bibliography, arrives at the same conclusions. These important observations are strengthened by Fenger's<sup>14</sup> report of the examination of eight thousand pineal glands of cattle, sheep, and lambs, in which he discovered no evidence warranting the acceptance of a pineal function.

After considering the seventy cases of pineal tumors reported to 1918 and finding the large majority without sexual precocity or abnormalities of the genital organs, Root<sup>13</sup> decides these changes cannot be ascribed to a functional pineal derangement, and H. H. Bell<sup>18</sup> has discovered no functional disturbances in other organs in association with pineal hyperplasia. McCord<sup>16</sup> ventures that many cases of unusual development in patients with pineal tumors may be due to a pluriglandular involvement, and W. B. Bell<sup>17</sup> remarks that, while one might anticipate the development of masculine characteristics in adult women with pineal tumors, no such cases are on record; for, as Strauch<sup>14</sup> observes, it is only in male precocious children that pineal tumors are found.

McCord<sup>16</sup> quotes Cushing as indicating that the functions of the hypophysis are readily deflected from the normal by intracranial changes accompanying pineal neoplasms, and in a case of sexual precocity and hypertrichosis, reported by Horrax,<sup>10</sup> a pineal tumor was found at autopsy to have invaded the pituitary. Those cases of pineal tumor in which sexual precocity occurred were chiefly teratomas, as in Biedl's case reported by Herzog.<sup>18</sup> H. H. Bell<sup>18</sup> reported two cases of pineal hyperplasia without obvious metabolic disturbances, and Neurath<sup>10</sup> in compiling twenty cases of sexual precocity seen at operation or at the autopsy table, found pineal neoplasms in three.

### The Thymus Gland

The relation of this gland to hair growth has been reasoned largely by reverse analogy, for it has been shown by Klose and Vogt<sup>1</sup> that following thymectomy in young pups the hair becomes rough and falls out. The contrary is stated by Paton,<sup>12</sup> presenting instances of thymic hyperplasia with lack of hair growth and infantile development of the reproductive organs; and MacLeod<sup>9</sup> suggests that the secretion of the thymus "inhibits sexual development with its associated hair growth."

### The Parathyroids

There is a very scanty literature on the subject. Pfeiffer and Mayer<sup>10</sup> noted a great shedding of the hair in rats during experimental tetany, their theory being that removal of the parathyroids leaves a poison in the blood. Paton<sup>12</sup> produced chronic tetany in animals by gradually ligating the blood supply to the parathyroids, and the hair whitened and fell out.

In summarizing these numerous deductions, the words of Gley<sup>36</sup> seem very apropos: "Without a physiological study of the organs of internal secretion, hypotheses are being too liberally formulated. The theory of reciprocal relations is insufficiently demonstrated."

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### MADAM CURIE VISITS AMERICA

On the occasion of her visit to the United States in May. Mme. Marie Curie will be presented with a gram of radium, the precious metal of which she is the discoverer, as a gift from prominent American women. Dr. F. C. Wood of the Crocker Memorial Cancer Research Laboratory heads a committee of scientists who will receive the distinguished French woman. Facilities have been arranged for her to demonstrate and experiment in American laboratories.

### DR. S. N. SCHMIDT HEAD OF COMMISSION

A group of physicians sailed on the Adriatic on January 19, 1921, to aid in checking the epidemic of typhus



Underwood & Underwood  
DR. S. N. SCHMIDT

in Poland. Just as the fight for civilization was not on our own shores, so do boundaries break when disease threatens. The cause of Poland is the cause of all humanity, and if typhus is to be checked in its menace to the whole world, it must be wiped out in the original foci of infection. The physicians on the mission are headed by Dr. S. N. Schmidt. From left to right, they are: Front row.—Drs. Jack Alcazar, S. M. Schmidt, head of the dele-

gation, Samuel Neuman, S. Fleisig, M. J. Colton, Irwin Michlin, Samuel Lovish, and Reuben Friesman. Back



Underwood & Underwood  
row.—Drs. Louis Silver, Samuel Flx., M. M. Anshin, Z. Sayet, R. Kohn, S. Wendkos, H. Apfel, Joseph Golub, and Z. A. Bonoff.

### DR. BRAISTED GOES TO PANAMA

THE establishment in Panama of an institute for the study of tropical medicine is a fitting memorial to the late Major General William C. Gorgas. Dr. William



Central News Photo Service  
DR. WILLIAM C. BRAISTED

C. Braisted, president of the American Medical Association, who has been chosen as chairman of the committee which is making arrangements for the project, has just sailed for Panama to assume the responsibilities of this office.

The purpose of the Institute will be to promote biological research in fauna, flora, geology, soils and climate, with due reference to medicine, agriculture, forestry and fisheries, and, in general, all scientific objects that will promote the development of the American tropics.

Institutions which have already expressed their intention to participate actively in the work include the Smithsonian Institution of Washington, D. C.; the Museum of Natural History, American Geographical Society, New York Zoological Society, and Brooklyn Botanical Garden of New York; Academy of Natural Sciences and the Commercial Museum of Philadelphia; Field Columbian Museum of Chicago; Carnegie Museum of Pittsburgh; Harvard and Yale universities, Johns Hopkins University, universities of Pennsylvania and Michigan, and the National Geographic Society.

The plan for organizing the Institute originated with the Division of Biology and Agriculture of the National Research Council. A temporary Executive Committee is now working on the proposed constitution and by-laws.

### HEALTH WORKERS TO THE FRONT

Whatever the emergency, the value of public interest in health conservation and the advantage of volunteer health workers may be relied upon in making immediately effective the measures of preventive health work. Here is pictured a group of workers fighting the spread of small-



International Film Service.

pox in East Chicago, Ind. The workers and their male helpers are preparing gauze for use in smallpox cases. From left to right they are Lillian Young, Municipal Judge H. M. Cohen, Carla Pearson, Gertrude McLaughlin, Mrs. Ray Stephenson, and E. N. Sawyer.

### STUDIES IN INFANT PARALYSIS IN VERMONT

The increase in poliomyelitis this season is in accordance with the curves of the disease established by the State Health Department of Vermont, by which a rise in the figure for 1920 is quite plainly forecast.

In discussing the geographical distribution in Vermont, Dr. W. L. Aycock says: "We know now that the disease spreads from person to person; that an individual suffering from the disease may harbor the virus in his nasal passages, and may infect others; furthermore, that a healthy person may transmit the virus without having the disease; that the disease is not limited to children; that it occurs in an abortive form—that is, without paralysis—and that unrecognized abortive cases may play a large part in the dissemination of the virus." Certain facts are adduced by Dr. Aycock to show that one year's cases result from previous ones, with occasionally a reinforcement from the outside.

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# HEALTH IN INDUSTRY

## Hygiene, Sanitation, Medical and Hospital Service in Relation to Industry

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Official Organ of the American Association of Industrial  
Physicians and Surgeons

OTTO P. GEIER, M.D., *Editor in Chief*

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### WORK HERE AND LIVE LONGER

HERETOFORE collective health has not been made the objective of the group. It has been an attribute generally held in the same category as other vague ideals—good to contemplate, but regarded as impractical and unattainable. Suppose this mental attitude toward medical supervision in a given industrial plant were changed from the usual apathy into an aggressive campaign for the proper type of medical supervision supported by cooperative effort on the part of both employer and employee to eradicate all unnecessary accidents, to lengthen the life of the average employee by means of improved working conditions, and to reduce illness to the least possible minimum—the campaign having for the slogan of the plant “Work here and live longer.”

What would it mean to the average employer to be able to prove the death rate in his plant to average 10 per cent lower than other similarly employed groups? How marked would be such an advantage in terms of increased production? How much would the unit cost of reduction be lowered if every man in the plant were healthy in mind and body? What would be the effect on relations and turnover?

That this ideal is approached in some plants is evident from the published records. Fluctuations in illness as affecting workmen bear a direct relation to industrial medical service. The data being compiled under the supervision of Mr. Brundage, assistant statistician of the United States Public Health Service, show fluctuating rates from plant to plant which are most significant. On closer analysis many of these differences will disclose correlations bearing on specific industrial medical problems; but it is fair to assume that part of these differences are the result of variable standards of medical supervision. It is known, for instance, that the recent “flu” epidemic in certain plants caused an absenteeism of from 20 to 30 per cent, while in other plants where constant medical supervision was provided absence on account of sickness during the same period was held down to 7 per cent—a result which was directly attributed to hygienic standards which contributed to disease resistance, a smaller percentage, therefore, being afflicted, and the deaths naturally much lower than where such safeguards were lacking.

The average executive in modern industry has not been

slow to recognize the accident factor in his cost, but very few have counted the economic loss incident to neglect of health matters. While much emphasis has been placed upon accident prevention and safety devices, relatively little attention is being given to the prevention of lost time from illness which in the aggregate costs industry seven times as much as lost time from accidents.

It is not only in reduction of overhead that a consistent health program commends itself. A not inconsiderable by-product of the accident campaigns in industry has been the advantage gained by this means in the matter of better relations. Lost time from illness costs industry seven times as much as lost time from accidents. We believe that the same ratio obtains in the opportunities provided for the cultivation of better relations in the contacts afforded through medical supervision. It may be held that these contacts are provided through the Workmen's Compensation Act, but the average workman's attitude toward surgical service under the Workmen's Compensation Act is that such service, being compulsory, the employer is not entitled to any particular return in good will for this expenditure except when unusually extensive service is provided.

In the medical supervision of the industrial worker, however, the workman derives something he cannot purchase. As a matter of fact, our personal relations with our own physicians do not afford the same advantage of the constant accessibility the workman has to his physician during working hours. If medical supervision is provided, from 3 to 5 per cent of the shop force will seek its service every day in the year. Experience suggests that less than 1 per cent of the service so rendered is not well expended, but improvement in organization will take care of this. Preliminary interviews with nurses and other attendants may be depended upon to protect the physician from unnecessary interruptions, but if the average workman can reach through industrial medical service the type of physician in whom he can repose confidence, the sort of man he would seek out for himself on the outside, one whose interests include not only the workman himself, but the members of his family, and who will see in such contacts the opportunity to show sympathetic appreciation of the man's personal and family health problems, then in truth does industrial medicine become the most effective means of promoting the public

health. It will conserve the man's interest even ahead of that of the company, if the situation should demand it, and will effectually build up human relations and a shop morale founded upon fundamental necessities.

It is time for industry to recognize that the cost of illness in the plant as well as unnecessary sickness in the community is, in the last analysis, a load upon industry itself. Industry is the source of wealth, and from that source must be paid all losses from accident, disease, and death that might have been prevented.

Finally, it is for the executive to realize that effectual health supervision resolves itself into a question of personnel. In many industries where a cheap designer, a

cheap production man, or a cheap salesman would not be considered, it seems not to be at all appreciated that it is false economy to hire a cheap physician who will, of necessity, design a low grade medical service. That type of service is no more acceptable to the workmen than a poor product is to the public. One of the sad sights is to see a plant dispensary physically well equipped, but professionally under-equipped, where the poor service is recognized and is not sought by the men. In too many instances the plant executive has fooled himself into the belief that he has provided a worth while service and that the men, on the other hand, are ungracious enough not to appreciate it.

EDITOR.

## SEATING OF INDUSTRIAL EMPLOYEES

BY HENRY LING TAYLOR, M.D., SECRETARY, AMERICAN POSTURE LEAGUE, INC., NEW YORK CITY

THE subject of output is the burning question of the day. Output depends upon method, organization, and supervision; but it also depends in large degree on the morale and physical well being of the employee. The employee must feel fit and, if possible, energetic and ambitious. He needs to be in good health, trained to his job, and must not be overcome by fatigue or worried by the monotony of his work. He must feel that he is getting a square deal and that whatever he can contribute to the output is for the benefit of all. In a word, he must have the cooperative spirit.

The avoidance of undue muscular strain and fatigue by habitual good postures, and by change of posture, are important factors in reducing industrial waste on the human side, and even in rendering accidents less frequent. On the whole, factory work done seated, when possible, is less fatiguing than work done standing, the alternation of the two being desirable, as a change of posture from time to time is extremely important.

In work done seated it is very important that the seat should not only fit the worker but also be adapted to the work. Some occupations require a high stool or seat, and in some the back of the seat can be omitted. In occupations which do not permit the feet to rest easily on the floor, a foot rest should always be provided. Some machines where the work can best be done seated are so constructed as to make a comfortable method of seating difficult, a condition which should be avoided in designing machinery. In working at objects on a moving belt, clearance for the knees should be provided below the moving belt. *Even when a proper seat has been provided, the worker must take pains to work in good posture with straight back, in order to avoid the evils of bent-over posture, which hinders the proper action of the lungs, heart, and other organs.* It is very important that chairs and benches be properly adapted as to height, that the seats be of the proper width, depth and slant, and hollowed at the back where the seat bones rest. If there is a back, the support should be properly shaped and placed at the right level, and there should be a wide space at the lower part, so that the worker may sit well back. When expert attention is given to the seating of operatives, the work will be more easily done and the output should be increased.

Seats adapted to the worker and to the work in hand reduce fatigue, backache, and add to the morale and efficiency of the workers. The subject is a new one and is only beginning to be appreciated and studied in indus-

try. From a purely practical point of view the comfort, health and happiness of employees is an asset.

As the tendency of modern industry is toward monotony and lack of variety in the postures and movements of the worker, these must be actively considered in laying out the work and, in addition to posture and seating, such questions as forenoon and afternoon recesses, hours of work, recreation, and kindred matters call for recognition in the up to date factory or shop.

Correct seating should provide such an anatomic shaping of the chair or stool that good posture is encouraged and made the comfortable position, whether one is active or resting. Most chairs are in themselves fatiguing, as they do not sustain the body in its correct posture. They strain a few points, and omit proper support of others.

The American Posture League, after painstaking study, has adapted and applied the following principles to various types of furniture, including factory seats:

(1) The pelvic seat bones should rest in a pocket or depression in seat floor, which will sustain the pelvis in its right relation to the spine and distribute the pressure borne by pelvis and thighs. In most chairs the seat bones of the pelvis bear the major part of the weight.

(2) The thighs should be supported at a higher level, from the pelvis to within a few inches of the bend of the knee, pressure on which should be avoided.

(3) The front edge of the seat should be rounded to avoid undue pressure on the nerves and blood vessels at the bend of the knee.

(4) The back of the chair should provide space for the buttocks and their coverings, both laterally and vertically; it should sustain the spine in correct relation to the pelvis without pressure on the bony spine or pelvis; it should be properly shaped for a wide range of sizes and types of back without the need of adjustable devices.

(5) The horizontal supports of the back should avoid pressure from sharp edges and should be correctly spaced as to height in relation to the shoulder blades.

(6) The back support should be free from pronounced curves (hollows) in the region of the shoulders, as these are a mould for round shoulders.

(7) The height of the seat should sustain to the working surface such a relation that there is room for the knee under the latter, and opportunity for the play of the arms at the elbow height.

(8) The height of the seat from the floor should be such that foot rests will give variation in height and place all in a proper relation to the working surface.



## FRACTURES INCIDENT TO OCCUPATION\*

BY JOHN J. MOORHEAD, PROFESSOR OF SURGERY, NEW YORK POST-GRADUATE MEDICAL SCHOOL AND HOSPITAL,  
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WE ARE accustomed to believe that certain occupations are inherently dangerous to life, limb, and health and for that reason seek to erect safeguards by various methods which are well known. We have reached in various branches of medicine what might be called the age of prevention; we seek to attain that goal in various branches of surgery also. Malaria, typhoid, and yellow fever are now recognized as preventable maladies.

Pulmonary tuberculosis, and other diseases almost as rampant as the "white plague," will some day become as uncommon as was typhoid fever among the soldiers in the late war. Cancer is the one great menace yet unchecked and my belief is that the war has set us back many years in the conquest of this foe which was being fought hard in the laboratories and clinics the world over. Doctors and scientists of all the civilized world were temporarily deviated from their accustomed work by the onset of war and their labors were centered in caring for the injuries and accidents incident to the greatest occupation the world ever saw. The injuries of this temporary occupation called war were practically wounds and fractures and, despite the concentration of medical thought and study of these two problems, no radical departures from established principles can be recorded, and no strikingly new method has resulted that will help us in our management of the accidents and injuries of peace time. Certain advances have been made, but they were applicable in the main to military and not to civic activities; they could be put into use for military but not for industrial warfare.

### The "Big Four" Causes of Accidents

Industry has always been regarded as the primary cause of accidents, and it still retains that position, but in recent years the extensive use of automobiles has made travel accidents a very close competitor. In certain non-industrial communities, the ordinary accidents and injuries incident to every day life scarcely afforded the physician an opportunity of caring for that large group of the injured which physicians in industry so often encountered. But the accidents incident to automobile usage have changed all this and now physicians the country over are brought into direct contact with this new element in their practice. In my own city of New York automobiles are now productive of so many accidents that their use has practically created what may be almost called an occupational hazard. Industry, transportation, mining, and ordinary mishaps now constitute the "big four" in the causation of injury.

In a broader grouping we may say that injuries occur as the outcome of pursuits, indoors and outdoors; they are the outgrowth of work or play; they arise from gainful pursuits or occur as ordinary hazards.

In these post-war days of stress, accidents are increasing; their severity in industry is lessening, but is rapidly increasing elsewhere. In this diminution, such organizations as the American Association of Industrial Physicians and Surgeons and the National Safety Council have taken a place in which they may well take pride. In a very large sense the entire metropolitan community

is engaged in some form of "occupation" and it is in that sense that I attempt to speak in my theme: "Fractures Incident to Occupation."

For descriptive purposes we may say that fractures are of minor, moderate and severer grades, not in the quantitative sense of the size of the broken bone, but in the qualitative sense of the damage done to osseous and soft tissues. A compound comminuted fracture of the right index finger may be more serious to a mechanic, a stenographer, a pianist, than a fracture of the thigh in the same individual. A laborer, a fireman, a policeman may be crippled by a fractured ankle, but a broken skull in the same individual may in no wise affect earning or productive capacity. However, a high official of one of our allied countries was recently forced to go out of office because of a minor fracture of the skull, although a crippling injury of several limbs would have permitted him to remain the honored incumbent of high official position.

In other words, we can say that the severity of a fracture is inversely dependent upon the occupation and not upon the severity of the injury. With this mathematical basis in mind, we are enabled to estimate the potential possibilities of a fracture not upon the initial severity but upon the probable outcome in terms of deformity or disability.

This brings us to the problem of treatment; for, after all, the diagnosis is no longer hidden in this day of universal x-ray usage. In passing let me say that we place too much reliance on this means of diagnosis; we use our eyes and our fingers too little; we are losing our inherent special senses from atrophy of disuse. Let us employ our special senses more for diagnosis, reserving the x-ray to determine the success of our attempts at reduction.

There are certain simple principles of treatment to guide us. These are pre-Hippocrates in origin, ages old in application. The styles of splints change almost as often as the clothes we wear; but, like our clothing, they cover (or uncover) the parts beneath.

There are four essential principles in fracture treatment—the four R's I call them. They are (1) Recognition or diagnosis; (2) Reduction or setting; (3) Retention or splinting; and (4) Re-education or functioning. Of these the second—reduction—and the fourth—re-education—are the most important. Briefly permit me to set forth some of the cardinal factors in each of these four groupings.

Let us at the onset first determine that we have a fracture and not a contusion-sprain or dislocation. If we are in doubt, let us treat our case as a fracture until we prove to the contrary. We may well invoke the doctrine of probabilities in reaching our conclusion, notably in respect to joint injuries. Almost 99 per cent of deforming and disabling injuries of the hip joint are fractures of the neck of the femur and nothing else. In the wrist and ankle, this proportion is about 85 per cent. In the smaller joints, like the fingers, fracture, not dislocation, not contusion-sprain, is the ultimate diagnosis. If we will remember this, we will less often have rude awakenings in our hip, ankle, wrist, and hand injuries. Let us realize also that basically there are only two classes or types of fractures, either of which may be simple or

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compound. Type I is the displaced form in which the fragments are unapposed. Type II is the non-displaced form in which the fragments are apposed. In Type I we must not only reduce our fracture but also retain it; but in Type II we need only retain it. This clarifies the situation to a considerable extent; it makes us realize that in some cases we do most when we do least.

### Methods of Reduction or Setting

This phase of treatment applies to Type I only. Let us realize that efficient reduction is the key to success and that splints, however modern or elaborate, will not of themselves aid reduction in the slightest. This cannot be emphasized too strongly, because too many of our cult believe that a splint of fancy name or fancy form will work some magic change in the hidden bone. A splint only helps to keep the part in the position in which we place it; no splint of itself ever set a fracture.

We must get in the habit of using anesthesia more often as an aid to reduction. Nitrous oxid is the safest and best for ordinary use. Ether or ethyl chlorid are the next choice; but chloroform is very dangerous in any accident case. Begin every act of reduction by making the original deformity worse to loosen fragments and stretch the soft parts. End every act of reduction by overcorrecting the original deformity. Absolute relaxation is a necessity because displacement of bone is due alone to abnormal muscle pull and we correct our bony mal-alignment by restoring mal-aligned muscles. In no joint fracture is muscle pull more potent than in Pott's fracture and, unless we fully relax the tendo-Achilles, our efforts may fail. To do this the best way is to fold the thigh fully on the abdomen and then make traction with the limb in that position. There are certain cases inherently impossible of reduction without open operation or skeletal traction. Let us recognize these and not waste time attempting what experience tells us is impossible. In this group, personally, I place certain fractures of the thigh, of the lower leg, of the forearm and of the os calcis. I advise operation in fracture of the olecranon and the patella provided the patient has the physique and the surgeon the technic. The introduction of buried foreign matter like plates, screws, and wire is only most exceptionally needed.

The first requisite of a splint is safety, the next security. Moulded plaster of Paris should be used in that class of case in which we ordinarily choose a circular cast. The latter are dangerous and they prevent ready inspection, hence do not permit early massage and motion. Thomas splints are excellent for the lower extremity, especially for first aid treatment. The Jones arm splint is an excellent device, also; but each of these requires constant supervision and for that reason are most useful in hospitalized cases. My routine for fracture of the neck of the femur, in selected cases, is the plaster of Paris abduction splint. For fractures of the thigh elsewhere, the Steinmann nail or the calipers (ice tongs) is the method of choice. For the lower third of the leg, the stirrup of Finochietto is the choice. Forearm fractures—irreducible by two attempts under anesthesia—are cut down and forced into place by jamming the fragments or holding them in place by kangaroo tendon. For non-union, autogenous bone grafting is the usual necessary measure.

Too tight or too loose splintage is, next to non-reduction, the most usual cause for failure of the fracture to unite and, accordingly, must be guarded against. Here, again, moulded plaster of Paris is very helpful for in effect this is the custom-made splint that is designed to

fit the patient, unlike the ready-made splint to which the patient is fitted.

### Re-education or Functioning

This, as stated, is the most important phase in treatment, reduction being of all the most necessary. Early massage and early motion should be part of our therapy and the nearer the fracture to the joint, the earlier these may begin. The foundation of this part of our treatment is the recognition that in the pathology of a fracture, the osseous damage is only the cause of the lesion, and that the soft tissues—muscular, tendinous, articular, vascular, and neural—usually share in the composite picture.

In a Colles' fracture, for example, massage begins the day after the injury, passive motion on the fifth day, active motion on the tenth, all splints off at the end of the third week. In every joint fracture the early use of massage and motion means less stiffness, less atrophy, less weakness when union has become firm. In the lower extremity fractures, especially of the thigh, the use of walking calipers, made from a Thomas splint, will get the patient out of bed, will exercise muscles, promote circulation, and restore functions nearly 50 per cent more promptly than by the older methods. Physiotherapy is a sovereign aid toward recovery and no longer can we regard our patient as cured until function is restored. When we return our patient to the occupation from which he came, then and only then should we regard our duty fully done. Cooperation from our patient is a great asset, for without that it is impossible to attain the safe and speedy outcome we now seek to attain.

As to compound fractures, we now aim to convert them into simple fractures by applying the war lesson of sparingly cutting out all the damaged soft parts, suturing or partially suturing, in the knowledge that by this method of controlled débridement we can combat infection and in effect make of our open a closed fracture.

### The Matter Concluded

Briefly, we have tried to show that the occupation of the patient is a main factor in the situation, irrespective of the gravity of the fracture. We have tried to stress the importance of reduction and re-education as essentials in determining the outcome.

We realize that there are two types of fractures, only, and that the treatment of one is often difficult, the other easy.

We recognize certain fractures as being in the "irreducible" class and in these we do the operation of open correction or use the Steinmann, the tongs, or Finochietto procedure.

We begin massage and motion early, not forgetting the physiotherapy will often give us an excellent result when the contrary appeared likely.

We convert selected cases of compound into simple fractures by the process of débridement.

Finally, we recognize that a fracture is a problem in major surgery, that the possibilities of crippling are inherent, that it often requires more skill and experience to obtain real recovery than in many abdominal operations. Traumatic surgery is not always spectacular, it will always appeal only to a certain class of physicians, it is becoming a specialty of its own, and in the recognition of its importance industrial surgeons have taken a prominent part.

Wage earners lose 250,000 working days a year because of illness, much of which is preventable.

# CHRONIC CARBON MONOXID POISONING—ITS IMMEDIATE AND SUBSEQUENT MANIFESTATIONS\*

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THE symptoms caused by chronic carbon monoxid intoxication depend on the capacity for elimination of the poison possessed by the victim, on the time of exposure, and on the amount of gas inhaled. In common with many other toxic compounds, carbon monoxid furnishes symptoms of excitation and of depression, the latter resulting from exhaustion of the organs which first respond by increased activity; hence the kaleidoscopic variety of symptoms produced by chronic CO poisoning. Alcohol intoxication offers some interesting points of similarity, as it also produces excitation, somnolence and a comatose condition. It is well known that one man is intoxicated by a small glass of liquor, while another not visibly affected by ten times that amount; one man while intoxicated becomes irritable, pugnacious, another tearful and depressed, and a third excitable but hilarious. These totally diverse effects of alcohol have not, as far as I am aware, been associated with the response of different endocrine glands in different persons. The divers effects of carbon monoxid can be thus correlated in the light of our present knowledge, as will presently be shown.

For the sake of convenience I shall refer the manifestations of chronic CO poisoning observed in this series to three periods.

*The first period—September-October, 1919, covering the inhalation of unknown, variable amounts of carbon monoxid, produced as subjective symptoms: a tingling, contracting sensation in the fingers and toes, similar to the pins-and-needles in a foot that is "going to sleep"; spontaneous twitchings of one finger or toe; numbness of face and scalp with the sensation of a tight fitting cap on the head, not giddiness, but recalling the drying of "New-Skin" on a cut. (I have been told that the beginning of ether anesthesia gives a similar sensation); an increasing feeling of weight in the chest; breathing an effort and the chest wall seems to be heavy and difficult to move; a sensation of weight and impeded heart action; the heart beats with an effort—at times it seems to falter, but recovers shortly after.*

Well defined objective symptoms were present: sudden transient pallor ("changing color") and at times more persistent greenish pallor; dark red lower lip, in sharp contrast to upper lip and gums of natural color; red patches on the cheek bones in which minute veins are sharply marked, these red patches and the bluish-red lower lip forming a vivid contrast with the pallor of the face. In some persons the cheeks are of an abnormal intense dusky red. The whole eyeball has a peculiar "shiny" or glittering appearance; at times the demarcation between the pupil and iris seems somewhat blurred, giving the eye a "washy" look. Even at this period I only saw the enlargement of the pupils at very rare intervals, and as my patient was in pain at those times pain was naturally assumed to be the cause. The veins of the hands are strikingly narrow and dark, almost black, recalling anatomical drawings in India ink. Acute central abdominal cramps occurred with visible muscle spasms. Bladder symptoms were evident as pain in the bladder, difficulty in starting micturition, sudden pressure of urine, much very pale urine being voided at times, the urine being nor-

mal as a rule. There were: transient "fainting spells"; shivering attacks without temperature; general muscle "soreness"; lassitude on waking; nervous irritability or depression ("the blues"); and transient sore, "raw" throat.

As the variable amounts of gas were produced by changes in the wind and other factors from time to time, these symptoms naturally varied in intensity. The feeling of numbness in the feet increased to a sensation of weakness. The rigidity of fingers and toes—preceded by neuralgic pains—is the terminal stage of this numbness. The sensation of weight and oppression in the heart and chest gradually develop into dyspnea and syncope. The reaction produced spontaneously after inhalation of small amounts of gas, or by camphor, is accompanied by shivering that cannot be controlled by will power and makes the victim feel extremely foolish. After a severe attack of shivering the feeling of utter exhaustion is such that no determination or habitual self-control avail to prevent an undignified manifestation of tears and one seriously decides that dying would be pleasant. This happened to me on two occasions.

*During the second period—November-December, 1919—the recognized, but unpreventable production of carbon monoxid in small amounts caused as subjective symptoms: great fatigability, any exertion, muscular or mental, producing exhaustion and a kind of "inside" tremor; marked shortness of breath on exertion, with racing pulse; extreme chilliness. The hands feel ice cold and lifeless, subjectively and objectively. It is impossible to get warm even in front of a roaring fire. The heart felt "weary," like an aching weight in the chest, at times the dull ache changing into a cramping pain, as if the heart were compressed in an iron grip; or the dull ache is interspersed with small, sharp, shooting pains, resembling the biting of some small animal. These cardiac irregularities cannot be made visible by the electrocardiograph, even when felt most acutely; they are probably caused by vascular spasms.*

*Objective symptoms present as: sudden uncontrollable drowsiness, causing sleep in the middle of a general conversation; shivering attacks without syncope and without rising temperature; short spasming of individual muscles; extreme thirst (our thirst was quenched only by drinking tea in great quantities; no other beverage had any effect); a great craving for sugar, which we ordinarily disliked; transient bronzing; a peculiar, transient "shrinking" of the face which temporarily looks pinched and old, for from twenty-four to thirty-six hours; low blood pressure with normal pulse pressure (25 to 30 mm.). Transitory "uncomfortable" heart action; irregular "flattening" pulse; and respiratory oppression after the intake of food, followed at times by slight shivering attacks; low blood sugar values. There were no other demonstrable findings.*

*During the third period—January to December, 1920—hypersensitization to minute amounts of carbon monoxid was so marked that a whiff of exhaust from a passing automobile, smoke from a neighboring chimney, traces of carbon monoxid in houses heated with hot-air furnaces, checked by many observations, were manifested by sudden acute, transient nausea; numbness of the feet which as-*

\*Part I of this article appeared in the February issue.

cended to the knees but extended no further; numbness of the face and scalp—the scalp felt too tight. These symptoms soon pass off, but they are invariably followed in from twelve to thirty-six hours by the following corroborative symptoms: pains in the feet, hands, or scalp (scalp headache), the veins being visibly narrow and dark in circumscribed areas. The area feels like a bruise but shows no subsequent discoloration. Beyond the contracted area the vein is engorged and of normal color. When the vein spasm relaxes the contracted portion of the vein is objectively *increased* in caliber and bulges somewhat; then the pain disappears. The same behavior of the scalp veins (though invisible) is probably responsible for the scalp or “coal gas headache” which I always get after exposure to traces of carbon monoxid. This headache is very characteristic; its character never varies. It is circumscribed to a small area of the scalp, which becomes sore to the touch. It is very intense, can be made to shift somewhat, but not to disappear, by rubbing, and cannot be banished by the usual remedies, aspirin, phenalgin, pyramiden. Morphin was not tried. It was checked to appear independently of any other headache-producing factor, does not incapacitate for work, and, though highly unpleasant, wears off in from one to several days. At times the dull ache in the heart region also appears. This syndrome has helped me to detect many unsuspected sources of carbon monoxid. There are no clinically demonstrable findings.

The following suggestions are submitted as having been found of value in my own experience with chronic carbon monoxid poisoning:

(1) Even slightly gassed patients should be watched constantly. “One can never be sure that an individual who is apparently only slightly affected will not pass into the second (syncope) or into the third stage (apnea) very suddenly, and *without premonitory symptoms*,” (McCombs).

(2) No patient suffering from carbon monoxid poisoning should be taken suddenly into *cold* air because there is eminent danger of collapse, and violent exercise should be avoided (McCombs). I can testify to the importance of this warning: the sensation of oppression and impeded heart action caused me to go out into the cold night air and walk a few hundred yards, when the symptoms rapidly increased to such an extent that I was on the verge of collapse, and camphor had to be given in a hurry (October 26, 1919). In carbon monoxid poisoning the entire organism works “with the brakes on”; the stimulation of cold air or exercise “speeds up” the body engine too rapidly, to the detriment of the machinery.

(3) Subcutaneous injections of camphorated oil give immediate relief from the sensation of respiratory and cardiac depression, even when these symptoms are mild. Calcium lactate, 15 gr. three times a day, reduces the severity and the duration of the attacks of shivering.

(4) Inhalation of oxygen mixed with 6 to 10 per cent carbon dioxid, recommended by Henderson and Haggard, is likely to be of great value. As this method of treatment was published only recently, I was not able to give it a trial. In cases of emergency it might be administered by a pulmotor. Henderson and Haggard showed that the blood of dogs gassed to unconsciousness and which contained 60 per cent carbon monoxid was practically cleared of the gas in twenty-two minutes by oxygen mixed with carbon dioxid, while the same saturation of carbon monoxid was eliminated in eighty minutes by inhalation of pure oxygen, and in one hundred and eighty minutes by inhalation of pure air.

(5) Organotherapy—dissicated total adrenal, or total

pituitary, by mouth—proved valuable to combat the after-effects in my experience. The dosage must be regulated according to the needs of the individual patient. Digitalis and tincture of *Strophanthus* also proved valuable in small doses; *Sajous* ascribes their beneficial effect to stimulation of the adrenal system. The after-effects of carbon monoxid poisoning coincide with the manifestations of temporary adrenal exhaustion, shown by the muscular weakness, circulatory weakness, and general asthenia.

The effects of carbon monoxid are not generally understood: namely, (1) its action on the red corpuscles, (2) the tenacity with which it clings to inanimate objects, and (3) the hypersensitization to carbon monoxid which follows chronic poisoning.

Carbon monoxid does not destroy the red corpuscles, as is still believed by many physicians and even taught in modern textbooks.<sup>1</sup> The gas is merely carried by the corpuscles in the same way in which oxygen is carried; but carbon monoxid retains its hold on the corpuscles three hundred times longer than does oxygen (McCombs). A corpuscle laden with carbon monoxid cannot simultaneously carry oxygen: hence the oxygen transportation is reduced by inhalation of carbon monoxid. It is impossible to demonstrate carbon monoxid in the blood in non-fatal cases after pure air has been inhaled for three hours (McCombs). The gas is eliminated by the same process by which it was absorbed, that is by breathing (Henderson and Haggard). The Katayama test was negative in the blood of the fourth inmate of my house on the day when it was positive in three of us, because this girl had walked half a mile and had been at work for several hours after leaving the house before her blood was tested. Breathing is normally kept up by the carbon dioxid supplied by the vital processes. These processes are reduced by carbon monoxid, and too little carbon dioxid is elaborated adequately to stimulate the respiratory center. A vicious circle results: inhalation of carbon monoxid reduces both the oxygen intake and the carbon dioxid production; the respiratory center, deprived of its normal stimulus, decreases its activity, and the toxic gas, instead of being eliminated, is thus retained. The symptoms of carbon monoxid poisoning are chiefly the result of the oxygen deficit: they are many and diverse, because many and diverse tissues suffer; each tissue complains in its own peculiar way. The weakest organs in a given person naturally suffer most; hence the diversity of symptoms produced in different persons by chronic carbon monoxid poisoning.

The tenacity with which carbon monoxid clings to objects such as garments and furniture causes the gas to behave almost as if it were dust or some other finely powdered substance. I had the opportunity of observing this three times. While the furnaces were being overhauled in my house, my patient and her nurse stayed at a hotel, while I stayed with a friend. Clothes belonging to this friend had been hanging in an alcove in my house for many months; they were carried in a basket on a very windy day to her house, a distance of at least one hundred yards.

I observed that my friend looked rather pale when I returned from my work about lunch time; when the meal was finished she began to show the slight objective symptoms of carbon monoxid poisoning, dark red lower lip, red patches on the cheeks, and glittering eyeballs. She complained about difficulty in breathing and uncomfortable heart action. Her pulse showed the peculiar “flapping.” I made her take a spoonful of brandy and she immediately developed the characteristic uncontrollable shivering attack, which lasted about five minutes. These symptoms puzzled me not a little, as she had been in her

own house all morning, occupied in sorting the garments aforementioned; but after I had been in the room a few minutes where these garments were spread out, the windows being closed, I felt acutely nauseated; the concentration of carbon monoxid must therefore have been considerable. In the second instance a sweater belonging to my patient was the cause of carbon monoxid symptoms. It had been in her room at my house constantly during the first period of our exposure, and been put in a suit case in which it remained after she came to the hotel. The first time she wore this sweater she developed symptoms of carbon monoxid poisoning within ten minutes. After a thorough beating in the open air had removed the traces of gas the garment could be worn with impunity. Several days later a woolen baby blanket, which she began to knit at my house, was taken out of the same suit case. She had worked on it but a short time when she developed symptoms of oppression, with characteristic irregular pulse, which subsided as soon as the object was removed and did not recur after the blanket had been cleaned as if it had been covered with dust. I have been told since, that in the United States training camps during the war the trenches were cleared, after gas attacks, by means of canvas shovels with which the gas laden air was thrown out as if it had been snow; which helps to explain the curious phenomena which I observed.

The hypersensitization to carbon monoxid produced by exposure may be responsible for the effect which the small amount of gas clinging to garments was able to produce; it is comparable to the sensitiveness to ether observed in persons who have had ether anesthesia. It has enabled the discovery of minute sources of carbon monoxid production in innumerable instances, corroborated by closer investigations. Even today a whiff of exhaust gas from a passing car or an equally small amount of carbon monoxid produces in me the sequence of symptoms which I have checked many times. Since this sequence is produced even when unaware of the source of carbon monoxid production, mere association of ideas can hardly be responsible for the symptoms.

The subject of endocrine efficiency and its relation to chronic carbon monoxid poisoning is so vast that it can be considered only in the broadest outline. Nevertheless, its economic importance is such as to deserve consideration. Endocrine efficiency and economic efficiency are intimately related. The data collected by McGurn and my own observations point far more definitely to specific, often transient and reparable, injury to certain glands of internal secretion produced by chronic carbon monoxid poisoning than to indefinite undemonstrable changes, vaguely ascribed to the nervous system. Histopathologic changes in the central nervous system in one fatal case of carbon monoxid poisoning, have been reported *Stewart*; but the evidence submitted seems questionable, to say the least, as no data are given concerning the source of gas production; autopsy was performed thirty-nine hours after death, and, as *Stewart* himself admits, "syphilitic infection cannot be entirely excluded." The symptoms described by McGurn and many which I observed can be brought in direct correlation to many known and recognized manifestations of endocrine insufficiency, as may be seen from the following brief survey.

**Thyroid.**—Hypertension, dyspnea on exertion, tremor, headache, and ravenous appetite are among the recognized symptoms of hyperthyroidism. McGurn's patient (Case XX) developed these symptoms after exposure to soft coal smoke. They disappeared when the patient was inhaling pure air in the country, to reappear when she returned to her apartment exposed to combustion fumes. I have

repeatedly produced these symptoms experimentally in myself by ingestion of 6 mg. thyroxin (thyroid hormone). Nervous excitability and irritability are known to accompany hyperthyroidism. Exposure to carbon monoxid by accidental closing of the main furnace damper, which remained unnoticed for a week, produced these symptoms to a marked degree in a married couple whom I know personally and in whom the symptoms disappeared after the source of carbon monoxid production had been discovered and eliminated.

**Parathyroids.**—Muscle spasms and muscular rigidity occur admittedly in Parkinson's disease and in postoperative tetany resulting from removal of the parathyroids. In the latter condition calcium lactate is the medication of choice. The markedly beneficial effect of calcium lactate on the muscular spasms and uncontrollable shivering observed in my patient and myself during exposure to carbon monoxid suggests that these symptoms were the result of transient parathyroid insufficiency. The parathyroids are admitted to control calcium metabolism (*McCallum*).

**Pituitary.**—Polyuria and headaches located behind the eyes are symptoms which today are connected with disturbance of pituitary function (*Timme*). A relation between the activity of the pancreas and the pituitary has also been observed; pituitary extracts inhibit pancreatic secretion (*Wiggers*). In McGurn's patient (Case XIII) exposure to the soft coal smoke which had produced symptoms of hyperthyroidism in Case X, caused polyuria and a diabetic condition associated with 12 per cent of urinary sugar in a short time. This patient had been accepted as a Class A risk for heavy insurance by two insurance companies six months previously. The details of this case should be read in the original. *Crowe*, *Cushing*, and *Homans* observed profound somnolence, and *Schäfer* a marked diminution of body temperature after removal of the pituitary in animals. Ingestion of total desiccated pituitary raises the body temperature from two to three degrees Fahrenheit (*Sajous*); I have verified this by taking pituitary experimentally myself. It is obvious that pituitary exhaustion may be expected to produce in a minor degree the symptoms caused by removal of the gland. For several weeks after our prolonged exposure to carbon monoxid my patient and I suffered at intervals from such intense drowsiness as to be overcome by sleep in the midst of a loud general conversation. The peculiar "shrinking" of the face, which makes it look temporarily pinched and old, may also be connected with an initial hyperactivity of the hypophysis, since *Hoskins* and *Hoskins* found that pituitary feeding produced a similar picture in frog larvae. Although starvation had been carefully excluded, the pituitary fed animals assumed temporarily the appearance of "starved tadpoles." The emaciation appeared within forty-eight hours but disappeared in a few days; while it lasted, the tadpoles were sluggish in their behavior; afterward they showed a high degree of irritability: "the slightest jarring of the aquarium starts them all to swimming about very actively." The severe subjective and objective feeling of cold from which we suffered may have been connected with pituitary as well as with adrenal insufficiency, since, as *Sajous* has pointed out, removal of the pituitary produces symptoms similar to those following removal of the adrenals (*Sajous*). The histopathology of the pituitary in lethargic encephalitis has, strange to say, received no consideration so far.

**Adrenals.**—Muscular asthenia, circulatory weakness, hypotension, chilliness, nausea, a tendency to fainting spells, sudden exitus from cardiac failure, bronzing, and

abnormally low blood sugar values are the symptoms of adrenal insufficiency enumerated by Sajous and found in Addison's disease. Transient manifestations of Addisonia were observed by Carles in men who had been gassed during the war. The cardinal symptoms of carbon monoxid poisoning coincide with those of adrenal insufficiency. After our exposure to carbon monoxid my patient and I presented the objective symptoms of transient bronzing, low blood sugar, and hypotension as well as the subjective symptoms of muscular fatigability, chilliness, and uncomfortable and irregular heart action.

Timme has called attention to the endocrinologic aspect of neurologic conditions such as neurasthenia, migraine, and epilepsy. Williams pointed out, as early as 1915, that the manifestations of neurasthenia are those of adrenal insufficiency. I have endeavored to show that the symptoms produced by chronic carbon monoxid poisoning may be interpreted in the light of our present knowledge concerning the glands of internal secretion. Only careful inquiry into the living conditions of patient enables the physician to detect and diagnose chronic carbon monoxid poisoning, as McGurn has proved. If, in the absence of demonstrable findings, the vague and meaningless diagnosis, neurasthenia, were discarded in favor of a more modern term—such as endocrinopathy—and the living conditions of the patient taken into consideration as well as his symptoms, many unsuspected instances of chronic carbon monoxid poisoning would be revealed to the credit of the physician and the comfort and benefit of the patient.

### Relation to Social and Domestic Problems

The imperceptible way in which carbon monoxid undermines the vitality, its ubiquity in modern life, the diversity of its effects, which, according to the relative endocrine integrity of the victim, causing nervous irritability in some and mental depression in others, are well calculated to make this insidious poison a potent factor in social and domestic problems. It may not be a mere coincidence that discontent and social unrest are prevalent among those whose occupation implies constant exposure to varying amounts of combustion gases: round-house men, who are surrounded by the smoke of locomotives; longshoremen, exposed to the combined smoke of engines, steamers and cranes; building trade workers, who inhale the large amounts of carbon monoxid produced by "building furnaces" and the "salamander stoves" used to accelerate the drying of newly constructed buildings.

In domestic life the inhalation of traces of carbon monoxid produced by inadequate gas fittings or slightly defective furnaces, especially hot air furnaces, may be the cause of far more domestic disharmony than has been realized. A striking instance came under my personal observation. My exposure to carbon monoxid has "sensitized" me to the effect of "coal gas"; twelve months of careful observation have taught me to recognize its first slight manifestations. A short stay in the house of friends invariably produced in me symptoms which I had learned to associate with the inhalation of small amounts of carbon monoxid; namely, an increasing feeling of numbness in my feet and face and slight feeling of constriction in my chest, followed several hours later by pains in arms and legs, scalp, and in the region of the heart, and extreme weariness, together with that type of despondency which is commonly known as "the blues." These friends refused to credit the production of any carbon monoxid in their houses, but on three different occasions, at several months' interval, my suspicions of the presence of the gas were proved to be correct. The first time the main damper of the furnace connected with

the hot water system was found to have remained closed for a week after being repaired. The second time the iron breeching was found to be corroded; the third time a chance remark revealed the fact that a small furnace for the hot water supply had been installed recently. This furnace had been connected with the single flue used by the central heating, thus duplicating the conditions which had led to the production of carbon monoxid in my own house. During these weeks both husband and wife had admittedly not felt well; the husband was troubled with frontal headache, attributed to sinusitis as an after-effect of influenza; the wife slept badly and was in a very irritable, aggressive frame of mind. She had attributed her weariness and irritability to the "strain" of housekeeping; and domestic harmony was conspicuous by its absence. Since then, domestic happiness has been restored completely by structural changes in the chimney which provided a flue for each furnace, and by the installation of new iron breeching (Figs. 4, 5, and 6).

These instances may suffice to call attention to the relation between slight chronic carbon monoxid poisoning and many hygienic, social, and domestic problems. It may well be deduced that "hot air" furnaces are responsible for much unhappiness as well as ill health, and the quaint remark of a fellow physician, "in divorce suits inquire after the gas fittings," may contain more truth than fiction.

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### INCREASE HOSPITAL APPROPRIATION

The Senate added \$1,100,000 to the appropriations for the construction of hospitals for wounded and disabled soldiers during its debate on the Sundry Civil Bill. The hospital at Fort Bayard, N. M., was allowed \$750,000; the Marine Hospital at Evansville, Ind., \$100,000, and the Marine Hospital at Pittsburgh, \$250,000.



# HEALTH OF TELEPHONE WORKERS—A SUMMARY\*

THE last published report of the Bureau of Women in Industry of the New York State Industrial Commission was made available to the public in July, 1920. It is a study of the telephone industry, made at the request of the Governor because during the year 1919 the telephone service, which had been almost above criticism, had deteriorated to such an extent that business was crippled and the public seriously inconvenienced.

The Bureau undertook an investigation of the conditions of employment for women in the telephone exchanges throughout the state with special reference to wages, hours, labor turnover and its causes. The women employed by the telephone company in New York are not subject to any of the regulations of the New York State labor laws. Moreover, telephony represents an industry which must render the public a twenty-four hour day service.

## Scope of the Study

The study was limited to cover 12,326 operators, some two-thirds of the girls employed in the exchanges of the geographical division of the state. Prior to this report of the New York State Industrial Commission, two studies of importance had been made. The first was published in 1907, and was a report of the Royal Commission on a dispute respecting hours of employment between the Bell Telephone Company of Canada and the operators of Toronto, Canada. This dispute hinged on the point that the working time of the operators was to be lengthened from five to eight hours, the operators contending that it was a physical impossibility to stand such long hours. The company at that time refused to deal with them in any way, and a strike was threatened, which threatened to affect so seriously the interest of the public that the Canadian Government stepped in to settle the dispute.

The second investigation was that of the Department of Commerce and Labor of the United States Government in 1910, after a resolution was introduced into the senate asking that investigation be made of the telephone companies engaged in the conduct of interstate business as to their method of business, wages, hours, etc. Both these reports threw considerable light on telephony, and are significant in that these official bodies at that time argued that the wages of the workers were too low and the hours too long.

As a result of the New York investigation, the Bureau of Women in Industry made the following recommendations, these recommendations being grouped under two general heads:

- (1) Reduction of labor turnover. A telephone operator is not a real asset to the company until she has been with it for one year. Therefore, every effort should be made to retain the operators.
- (2) An increased number of operators. Traffic has increased 27.5 per cent from January, 1919, to January, 1920. It is necessary, therefore, that the number of operators increase proportionately to the increase in traffic.

## Remedies Recommended

As means of meeting the problems presented by these two factors, the Bureau of Women in Industry would therefore recommend:

- (1) Scientific selection of suitable operators by the Employment Department in order to decrease the labor turnover within the Training School itself.

(2) A reorganization of labor management, so that the same department, preferably the Employment Department, is responsible for employing, dismissing and accepting resignations of operators, thus securing coordinated methods of handling labor supply.

(3) The limitation of the number of working days to six.

(4) Compulsory rest periods of fifteen to twenty minutes at reasonable intervals for every operator, preferably splitting the trick to two equal parts.

(5) The elimination of all overtime, and the gradual establishment of a seven hour shift for the day and night operators similar to the seven hour shift for evening and split-trick operators.

(6) A higher maximum wage rate, and a faster rate of promotion for an employee who has been in the service for two years. Increase in wage, after this period, which marks the beginning of 100 per cent efficiency, should be such that it will be an incentive to remain with the company.

(7) The extension of the facilities of the Medical Department to give operators periodical physical examinations with particular reference to nervous strain and its effect on health and efficiency. In order to make this effective, complete medical records for each employee should be kept.

(8) A democratic system of organization and representation among the employees, through which they may express their desires and by which they may acquire a sense of responsibility toward their work.

The Bureau of Women in Industry would recommend further:

(1) An amendment or amendments to the Labor Law which shall include telephone exchanges as subject to the supervision of the Industrial Commission as prescribed for factory and mercantile establishments under Section 51-a of the Labor Law.

(2) The serious consideration by the Public Service Commission of the items in this report which have a bearing upon the much complained of inadequacy of the telephone service, with such action to remedy these defects as is possible under its broad powers.

## Fatigue Study Not Made

It was not possible for the Bureau of Women in Industry, in the short time allotted to it, to make any scientific study of the results of fatigue involved in operating a telephone switchboard. The Bureau strongly commended that the Medical Department of the Telephone Company be utilized to make a thorough study of the effects of telephony upon the constitutions of women operators and the possible effects upon their children.

It is undoubtedly true that a telephone operator is subject to constant strain. The company has attempted to reduce the physical strain of stretching and reaching by limiting the size of the board which the girls operate and by adjusting the height of the board so that the girls may either sit or stand at intervals. The company has also adopted a policy of rest periods requiring a fifteen minute break during the first half of the day's service and another fifteen minute break during the second. When there is a shortage of labor, however, or work is particularly heavy, rest periods are not always to be had. In view of the testimony of the medical authorities of Toronto in the study of telephone operating made by the Royal Commission, the Bureau considers the strict observance of rest periods imperative.

One of the significant points in the report is the need for closer cooperation of the medical with the other departments. The standards for "loads"—the number of calls an hour—which the operator handles have apparently been worked out with the emphasis largely placed on the

\*A report submitted to Alfred E. Smith, governor of the state of New York, prepared by the Bureau of Women in Industry of the State Department of Labor, New York, July, 1920.

degree of efficiency and speed possible from each position, and little consideration has been given to the human element. The scientific measurement of fatigue of the operator should certainly be considered in relation to scientific measurement of a possible "load." Though it is true that the ordinary methods of measuring fatigue are of little value in the telephone industry because of the large personal factor involved, the possible emotional strain from dealings with irritable subscribers, uncongenial supervision, etc., these very difficulties make the study of the problem all the more essential.

The work of telephone operating under any conditions entails some strain on the nervous system; the faculties are kept constantly on the alert, there is high tension on the special senses, and a certain amount of mental worry. The strain is in proportion to the nervous force exhausted, and exhaustion is a matter only of degree depending upon the duration and intensity of employment. Telephone operating differs from most other occupations in which women are employed in its call on the special senses of sight, of hearing and of speech. Even when not actually busy, operators are not resting or relaxing, because they are necessarily on the alert. The impatience of subscribers is also an important cause of nervousness. With each call a light flashes in front of the operator, several of these lights flashing simultaneously show that a number of subscribers are calling for numbers at the same time. The operator is expected to give the quickest possible attention to each, and to remember which light flashed first. When several signals come at once, and others come before these can be cared for, the order is necessarily lost and her effort is concentrated on clearing the board. When an impatient subscriber jiggles his receiver he not only flashes the signal light in front of the operator, but when the operator opens her key to learn his wants, a clicking sound is caused in her ear every time the subscriber moves the receiver up and down.

Consciousness that a number of subscribers are waiting to have their calls attended to, their growing impatience emphasized by the constant flash of lights before her eyes, and the incessant buzzing in her ears, together with the knowledge that the supervisor is standing behind her either hurrying her or asking other operators to attend to her numbers, and the observer may plug in to criticize at any moment, causes strain which might in some degree be lessened if subscribers learned to be a little more patient.

The operator is allowed to respond in certain set phrases, such as "Number please," "Excuse me please," etc. She may not "talk back," no matter how much she is being abused by a subscriber, and any abuse which the subscriber may heap on the operator only delays her operations and clogs her switchboard.

### Supervision Unsympathetic

Another cause of strain is undoubtedly the system of supervision. One of the most common complaints and criticisms of the telephone company as expressed by the operators, was that supervision was unsympathetic and over-strict.

For every eight to ten girls there is a supervisor, walking back and forth behind their chairs, assisting in handling calls when necessary, and helping in the adjustment of difficulties. The assistance the supervisor renders the operators is incalculable. Her presence, however, adds materially to the mental and nervous strain of the operator, especially if she herself is nervous and irritable. The continual presence of a supervisor, if she is not a person of understanding and sympathy, creates in itself an element of nervous strain.

The position of observer is a second supervising position. There are fewer observers than supervisors and they are not visible to the operators. The observer has a board which is called an observation board and from which she can plug in on any operator, follow her work

in detail, time her calls, hear her remarks, and also those of the subscriber.

There is no doubt that close supervision is necessary. It is true, however, that this close double supervision which the company gives the girls plays a very large part in the nervous strain on the operator. One supervisor has been reported as walking back and forth behind her nine or ten girls saying in low, monotonous voice, "Hurry girls, hurry girls." With a girl answering calls as rapidly as possible, and with lights flashing in front of her eyes continuously, and the buzzing in her ears, the fact of being driven from behind irritates many of the girls to the extreme.

The telephone company has attempted to establish a six day week for all operators with an eight hour day for the day and night shifts, and for operators on the evening and split tricks, a seven hour day. Not always, however, is this six day week carried out, for the Bureau found that some 3 per cent of the operators had worked the seven day week from pay roll records for the week ending December 13, 1919. Seven day labor is one which has long been deemed as bad business policy and the telephone company is making every effort to reduce it to a minimum. Aside from the question of fatigue, no operator under any circumstances should be asked to work seven days without any break. Seven day labor is undoubtedly a contributing factor of the labor turnover of the company. It also tends to increase absenteeism and lost time, especially among workers as youthful as telephone operators and where the work is so exacting.

While only a small percentage of the operators were found working in the seven day week, nearly 30 per cent of the operating force worked overtime during the week taken. The amount of overtime varied considerably in the different localities. The largest proportion fell in Brooklyn and the lower Bronx, where 51.65 per cent of the operators worked beyond their scheduled assignment of hours. The highest peak of overtime for the entire state is reached by the number of operators (35.76 per cent) who worked from three to six hours beyond their regular assignment. The next highest peak (35.02 per cent) is reached by those operators who worked from six to nine hours beyond their regular assignment.

The largest amount of overtime existed among the evening operators, in which group 2,381 worked overtime, as against 1,035 day operators and 211 night operators.

### Basic Work Day Reduced

The telephone company has gone farther than many other industries in the state in the reduction of its basic work day from nine to eight hours, and in the case of evening and split trick shifts, from nine to seven hours; but the fact that over one-fourth of the operators in New York State work beyond their regular assignment of hours is indicative of a weakness in the labor policy of the company.

In the testimony of the Royal Commission of Toronto, Canada, physicians recommended that the telephone operators should have a work day of seven hours, spread over a nine hour period, and that the time should be divided as follows: two hours work, one-half hour relief; one and a half hours work, one-half hour intermission; two hours work, one-half hour relief; one and a half hours work. They testified further, however, that a seven hour working day would still be too long for telephone operators. The working day should eventually be reduced to six hours actual labor, spread over a period of from eight to eight and a half hours.

This testimony is particularly significant when it is realized that the predominating age for the largest number of new telephone operators is sixteen.

The company definitely desires a certain type of girl—in age, between sixteen and twenty-three, with the excep-

tion for night work operators, where the maximum is thirty-five. The company has in mind the growing policy of the state prohibition of night work, particularly for younger women, and is endeavoring to raise the age of night workers to over twenty-one years. During December, 1919, for instance, of 512 girls who reported for work, 409 were twenty-one years of age or under. So far as experience goes the company prefers girls who are direct from school, without industrial experience. Such girls are more amenable to instruction and discipline and can fit into the company's organization with less effort. Young persons are also preferred by the telephone company because of the greater facility with which they learn to work and acquire dexterity, and because their reactions are much quicker than the reactions of older girls. Yet the years sixteen to twenty-three are those during which the nervous and physical system of a woman is peculiarly sensitive to strain and susceptible to injury. Injury sustained at this time of life is apt to be more far reaching than would be the effects from similar causes in maturer years. The effects upon posterity caused by undermining or weakening the constitutions of these young women gives rise to serious consideration.

In connection with the youth of the operators attention must also be called to the fact that telephone operating does not seem to fit a woman for any other occupation or calling. Additional significance is, therefore, to be given to the fact that the average time spent by operators in the service is from two to three years and that the period of service is usually given at the time when a young woman is best able to learn with advantage the trade or calling which is to put her in the way of acquiring a livelihood during the years of her life.

### Wage Policy Unsatisfactory

The wage policy of the telephone company was considered by the Bureau to be unsatisfactory. While the study by the Bureau was being made, three groups of operators had their wage rates increased.

In general, the first increase affected only Greater New York and raised the minimum wage from \$12.00 to \$15.00 and the maximum rate \$1.00. The next increase was made for the operators longer in the service and increased the maximum \$2.00. The third increase was applicable to the other exchanges throughout the state.

Based on a grand total of 10,731 operators—which figure excluded 188 operators whose earnings could not be considered typical, as absence made their earnings below the basic wage—the earnings fell like this: 336 received under \$12.00; 1,983 received between \$12.00 and \$15.00; 2,997 received between \$15.00 and \$18.00; 2,485 received between \$18.00 and \$21.00; and 1,976 received between \$21.00 and \$25.00. After the \$25.00 mark is reached, there is a gradual decline, only 110 persons on the operating force earning as high as \$30.00 per week.

There was in the mind of the Bureau no doubt that the low wage rates and consequent low earning capacity of the operators had much to do during the year 1919 with the company's high labor turnover, resulting in inefficient service. The Bureau believed, however, that the telephone company had not gone as far as it should on wage increases, and that other increases would be necessary if the company hoped to retain a permanent well organized force. The Bureau would not quibble with the telephone company over its minimum wage rate, although the minimum wage rate of telephone operators under the United States Railroad Administration is \$70.00 per month, something over \$16.00 a week. The Bureau believed, however, that the maximum rate was still too low and that the rate of promotion was all too slow.

In comparing the wage rates of the telephone company with those of other industries that require the same qualifications and same standards of efficiency, other employees can reach the maximum wage offered by the telephone company in a much shorter time and know that their wages will be increased in fair proportion to their length of service. Since the biggest asset which the telephone company has is the operator who remains with it longer

than two years, a greater wage incentive should be placed before the girl as an inducement to remain with the company. Furthermore, that a girl should reach her maximum earning capacity, except for the few who become chief operators or supervisors, after she has been with the company six years, which in many instances may be when she has reached the age of twenty-two or twenty-five, is indeed discouraging to any worker and implies poor knowledge of psychology on the part of the telephone company.

It is the opinion of the Bureau of Women in Industry that if promotions were made more rapid and the maximum wage made higher, the telephone company could retain in its service a very much larger percentage of trained operators, thus reducing the cost of training operators and eliminating that large cost which now appears on the books of the company.

A satisfactory system of promotion and wage increases as a reward for efficient service is particularly significant when it is realized that when the study was made, for every three girls who entered the telephone company's service, one dropped out in training and a second before the first year was over, and the third stayed longer than a year. Since the estimated cost of training an operator varies from \$68.00 to \$100.00 per operator, the shorter the length of service of the operator the greater expense to the company. Also, since an operator must be in the service of the company "two years before she can efficiently carry the theoretical load of 230 units per hour," the kind of service which the public receives depends very considerably on the length of service of the operators.

The company cannot altogether control labor turnover, of course, though so far as the question of wages, age at beginning work, opportunities for promotion, fatigue, and sympathetic treatment of employees enters into the problem, the answer lies with them.

In the city of Manhattan, 24.33 per cent of the operators had been with the company six months or less. This is exclusive of students in the training school. What this means, interpreted in terms of service which the public receives from the operators, is that these operators are able to handle efficiently about 75 per cent of the theoretical load of 230 units per hour. While about 24.33 per cent of the operators had been with the company less than six months, the next largest percentage is among the operators who had been with the company over six months and through one year, or 13.68 per cent; and the next largest group had been with the company over one year and through two years, or 12.37 per cent. In other words, slightly over one-half of the operating force in Manhattan had been with the company less than two years. The situation of the telephone company, therefore, resolves itself into the fact that the important element in determining the efficiency of the service, from the point of view of the operator, rests absolutely on the length of service in the occupation.

On the whole, the Bureau of Women in Industry found that the lighting, heating, and ventilation in the telephone exchanges were better than in the average factory, though the ventilation in the operating rooms was still open to some criticism as not being sufficient. The company, it is stated, has gone much farther than the majority of large employers of women in paying particular attention to the physical conditions under which employees work. Seating arrangements, wash rooms, toilets, lockers, rest rooms, and lunch services are commended.

Aside from its value as a report on general conditions in the industry and on the prevalent hours and wages for telephone operators during the year 1919, the study made by the Bureau is significant as suggesting the need for scientific investigation of all industries where intense strain is involved and nervous energy continuously extended. We have not yet more than scratched the surface

in our knowledge of the relation of industrial conditions and health, and only with a basis of such knowledge will we be able to intelligently meet the pressure of modern industrial development.

## PENNSYLVANIA INDUSTRIAL PHYSICIANS MEET

Pennsylvania was the first state to form a state chapter, and on December 17, 1920, in Philadelphia, the eleventh meeting was held, with nearly three hundred physicians in attendance. The following program was full of interest and profit.

### Program

#### MORNING SESSION

Address of Welcome, by Honorable Clifford B. Connelley, Commissioner, Pennsylvania Department of Labor and Industry, Harrisburg, Pa.  
The Obligation of Industry in Relation to Infant Mortality, by Dr. Ellen C. Potter, Chief, Division of Child Health, Pennsylvania State Department of Health, Harrisburg, Pa.  
Discussion: Dr. Edward Martin, Commissioner, Pennsylvania State Department of Health, Harrisburg, Pa.  
Our Legislative Program, by Dr. Frederick L. VanSickle, Executive Secretary, Pennsylvania Medical Society, Harrisburg, Pa.  
Some Observations on the Treatment of Wounds, by Dr. Hubley R. Owen, Chief Surgeon, Bureau of Police and Fire, Philadelphia, Pa.  
Discussion: Dr. W. Estell Lee, Philadelphia, Pa.

#### AFTERNOON SESSION

Transportation of the Injured, by Dr. R. R. Sayers, Chief Surgeon, Bureau of Mines, Department of the Interior, Washington, D. C. (Illustrated by motion pictures and lantern slides.)  
Minimum Physical Standards for the Child Laborer, by Dr. S. Josephine Baker, Chief, Bureau of Child Hygiene, Department of Health, New York, N. Y.  
Discussion: Dr. Mary R. Noble, Assistant Chief, Division of Child Health, Pennsylvania State Department of Health, Harrisburg, Pa.  
The Rehabilitation of the Industrial Cripple, by S. S. Riddle, Chief, Bureau of Rehabilitation, Pennsylvania Department of Labor and Industry, Harrisburg, Pa. (Illustrated by motion pictures and lantern slides.)  
Discussion: Dr. John N. Bassin, Chief Surgeon, New Jersey Rehabilitation Commission, Trenton, N. J.

### New Chapters Organized

On November 6, 1920, at Columbus, O., the Ohio State Chapter was formed and organized, with the election of Dr. Don B. Lowe, president; Dr. Sidney McCurdy, vice-president; and Dr. A. J. Lanza, secretary, with thirty charter members.

On January 13, 1921, the New Jersey Chapter was organized with thirty-two charter members.

It is hoped that other states will follow this good example and soon have their chapters.

## WHERE ASSOCIATION MEMBERS LIVE

Membership of the American Association of Industrial Physicians and Surgeons will be interested in knowing in what states the members are located:

State—	No. of Mem- bers.	State	No. of Mem- bers.
Alaska .....	1	Nebraska .....	2
Arkansas .....	2	Nevada .....	4
Arizona .....	1	New Hampshire .....	11
Canada .....	1	New Jersey .....	11
California .....	16	New York .....	45
Colorado .....	4	Ohio .....	64
Connecticut .....	10	Oregon .....	2
District of Columbia .....	4	Pennsylvania .....	160
Delaware .....	6	Rhode Island .....	2
Idaho .....	2	South Dakota .....	1
Illinois .....	91	Tennessee .....	2
Indiana .....	11	Texas .....	1
Iowa .....	4	Utah .....	1
Louisiana .....	2	Virginia .....	2
Maryland .....	1	Washington .....	9
Massachusetts .....	20	West Virginia .....	1
Michigan .....	41	Wisconsin .....	21
Minnesota .....	12	Wyoming .....	2
Missouri .....	5		

There are approximately 2,500 physicians in the United States who are specializing in industrial medicine and surgery and many of these should be members of our Association. If you know a physician who is so specializing, why not urge upon him or her to make application?

A postal card to the secretary's office, making the request, will bring you as many membership application blanks as you may need.

Our constitution provides for a Membership Committee and we have a live one, consisting of Dr. C. C. Burlingame, chairman, Dr. Harry E. Mock, and Dr. A. W. Colcord.

They have formulated a questionnaire which is sent to all applicants for membership and which will be of great help to the Committee in determining whether or not the applicant has the necessary qualifications for membership in our Association.

## HIGH TEMPERATURES AND HIGH HUMIDITIES

A study as yet inconclusive but highly significant is published in *Public Health Reports* of January 28, 1921, of the "Physiological Effects of High Temperatures and High Humidities in Metal Mines." From the data submitted, the following symptoms were found in workers in still air metal mines, with a wet bulb temperature of 90 degrees F. and under 100 degrees F., and with a relative humidity of 89 per cent or higher: (1) Blood pressure, systolic, and diastolic, fell rapidly. (2) Body temperature rose; in one case it reached 102 degrees F., and this after less than two hours having been spent in the hot, humid air described. (3) Pulse rate increased and seemed more sensitive to exercise than normally. (4) Perspiration was very profuse. (5) Dizziness was a common symptom, and sometimes was marked. (6) Physical weakness or exhaustion was marked in some cases and present in all. (7) Inability to think quickly or accurately was a very common symptom. (8) Nausea was occasionally found. (9) Headache was also occasionally found. (10) Loss of weight was especially marked in men who had been employed under above conditions over a period of years, but occurred even after exposure only a few days. In a still air mine with wet bulb temperature of 85 to 86 degrees and relative humidity of 96 per cent, the symptoms mentioned were not found as long as the subjects remained at rest or took only light exercises. Data should also be obtained as to the effect of hard work in coal mines on blood pressure, bodily temperature, pulse rate, etc.; and similar data should be obtained for air with various temperatures, wet and dry bulb, and still as well as moving air.

## HEALTH SUPERVISION AN AID TO INDUSTRY

The National Industrial Conference Board, with headquarters at 10 East Thirty-ninth Street, New York City, has just published the results of physical examinations of industrial workers in thirty-four plants, which go to show that these examinations have increased efficiency, diminished accidents, reduced absence, lowered the labor turnover, eliminated tuberculosis and other contagious diseases, brought about a better adaptation of the worker to the job, and a feeling among the employees that their interests are being intelligently safeguarded. The study includes 410,106 workers—237,183 men and 82,923 women. Little or no objection to the examination was shown on the part of the workers, the largest number of objections being 200 among 62,000 employees. Ten plants employing 155,000 workers had no refusals. Physical examinations were introduced into this group in 1910, but in twenty-three of the thirty-four plants they were not introduced until 1914 or later.

# THE NATION'S HEALTH

## Public Health and Public Welfare, Administrative Medicine, Organized Health Service

C.-E. A. WINSLOW, DR. P. H., *Editor*

### THE CLEVELAND SURVEY

THE completion of the Cleveland Hospital and Health Survey<sup>1</sup> marks an epoch in the study of health organization in America. We have had many health surveys and some hospital surveys, conducted in various cities and under various conditions; but this is the first time that a comprehensive study has been made of all the complex factors which influence the physical well being of a great community. The survey committee of the Cleveland Hospital Council, under the chairmanship of Malcolm L. McBride, displayed extraordinary vision in outlining a plan which included in its scope, "Development of medical education, both postgraduate and undergraduate; development of nursing education, both general and special; advancement of public health and preventive medicine; and care of the individual sick."

The execution of this project has been as brilliant as the conception which inspired it. Haven Emerson, who directed the work, was ideally fitted for his task by temperament and experience; and the fact that he associated with himself such experts as Michael M. Davis, Jr., Josephine Goldmark, Wade Wright, W. F. Snow, S. Josephine Baker, Donald B. Armstrong, Thomas W. Salmon, Louis I. Dublin, and Robert B. Osgood guaranteed the success of the undertaking. The complete report, in eleven compact volumes, aggregating more than one thousand pages, will occupy a central position on the reference shelves of every student of public health organization.

Volumes I and II of the Survey—dealing, respectively, with General Environment and Sanitation and with Public Health Services and Private Health Agencies,—are modeled very much on the lines of earlier health surveys, although they are on the whole more complete and illuminating than any hitherto conducted. Dr. Emerson's introductory sentence in Volume II,—“Public health organization in the majority of the cities of the United States is more a vision than a reality, a hope of a few rather than a living, growing, democratic function of civil government and private endeavor,”—strikes a true keynote. The primary needs, in Cleveland as elsewhere, are for full time expert service in the positions of Health Commissioner and Bureau Chiefs, and for coordination of private health activities through a strong local Public Health Association.

Part III of the Survey, A Program for Child Health, outlines an admirable plan for the organization of a Central Child Health Council, coordinating public and private agencies, with committees on maternity hospitals, on prenatal care, on infant care, on day nurseries, on children's

institutions, on social service, on nursing, and on dispensaries. Exception may perhaps be taken to the sweeping indorsement of open window ventilation for schoolrooms in this section. Window ventilation combined with gravity exhaust ducts may often prove entirely satisfactory, but window ventilation alone, without structural provision for the removal of the overheated air, and without special and extensive radiation, has been found wholly inadequate to maintain satisfactory atmospheric conditions.

Part IV, on Tuberculosis, shows that Cleveland's accomplishment in this field is far above the average for American cities, although the usual needs for expansion along the lines of more extensive provision for institutional care, increased nursing service, the development of expert medical consultation service and the appointment of a full time chief of the Bureau of Tuberculosis in the Health Department, are clearly indicated.

The removal of discrimination against venereal disease by general hospitals and the establishment of a Bureau of Venereal Disease under the Health Department, are perhaps the most important recommendations in Part V, on Venereal Disease, although emphasis is properly laid throughout this volume upon the diverse educational aspects of this problem.

Part VI, dealing with mental diseases and mental deficiency, reveals inadequacies, perhaps more striking than those indicated in any other section of the survey. Dr. Emerson states that “no more scathing comment upon civil administration could be made than the description of the kind of care provided for the mentally afflicted at City Hospital.” Dr. Salmon's plan for reconstructing the situation involves the creation of a State Commission on Mental Diseases to administer state hospitals and to plan the general campaign, a State Institutional Development Commission to formulate a ten-year program of institutional development, radical changes in legal procedure with regard to mental cases, extensive increases in institutional clinic and social service, the coordination of private agencies through a strong committee on Mental Hygiene, and many other steps which cannot be summarized in brief. This volume is one of the most brilliant contributions of the Cleveland Survey and presents perhaps the broadest and best program for mental hygiene which has yet been put in printed form.

Volume VII, on industrial medical service, women and industry, and children and industry, opens up a new vista in the field of health surveys. It reveals the chaotic condition of industrial medicine and industrial nursing, the need for standardization and for expansion along the lines of cooperative dispensaries, and of the general practice of routine physical examination. It indicates also the

1. Report to be obtained from the Cleveland Hospital Council, 308 Anisfield Bldg., Cleveland, O.

need for improvement in the legislation designed to safeguard women and children, and for better enforcement of the laws which now exist.

Part VIII, which deals with education and practice in medicine, dentistry, and pharmacy, presents a program for the reorganization of the medical school of Western Reserve University, advocates much needed steps for the regulation of quacks and nostrums, and urges the development of a training school for dental hygienists.

Part IX, on nursing, is another volume of the survey which breaks practically new ground, in its recognition of the fact that radical changes in educational standards are essential if the type of nurses is to be found necessary to play an effective part in the modern public health campaign. Miss Goldmark brings forcible evidence of the haphazard conditions which exist in many training schools and recommends the organization of a university school of nursing, with definite improvements in existing schools, which shall tend to develop them as real educational institutions with sound preliminary theoretical instruction and ward work, correlated with theory, and in kind and amount needed by the pupil for her education, rather than in the kind and amount dictated by the needs of the hospital for nursing service. The working out of a course along such lines should make it possible to diminish the usual three year period of training by at least eight months; but high school graduation should be required for entrance.

Volume X, on hospitals and dispensaries, gives a particularly exhaustive and illuminating program for the development of facilities for the cure of the sick, with detailed recommendations in regard to hospital and dispensary organization and financing. It deals with such problems as those presented by the convalescent and the chronic case, which are too often omitted from consideration. Finally, Part XI discusses the methodology of the survey, with a suggestive bibliography of surveys and an index to the entire report.

It seems almost futile to attempt in two pages to review the salient points in a thousand pages of compact material. Yet it seems essential to call the attention of all public health workers to this mine of information which Dr. Emerson and his colleagues have prepared, and to express the debt that we all feel for the unique service which they have rendered to the cause of public health.

EDITOR.

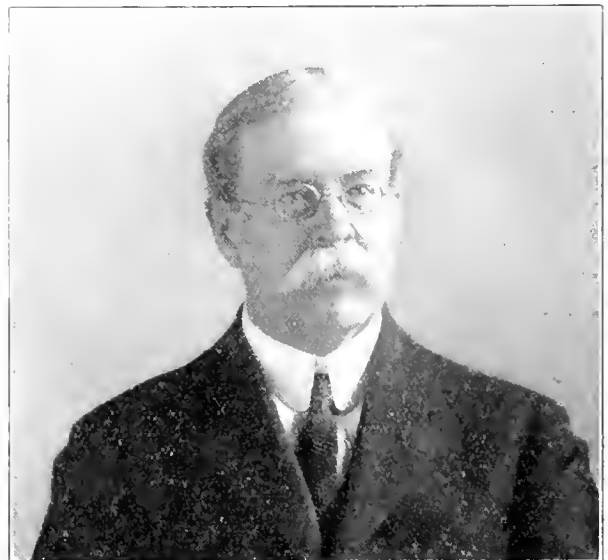
## AMERICAN JOURNAL OF HYGIENE

THE first issue of what constitutes a new and unquestionably authoritative medium for reports of research along the lines of public health and hygiene appears in the *American Journal of Hygiene*, of January, 1921. The *Journal* is edited by William H. Welch of the School of Hygiene and Public Health of the Johns Hopkins University, supported by an editorial staff representative of the leading institutions of research in the United States. It will be devoted exclusively to the publication of papers representing the results of original investigations in the domain of hygiene "using the term in its broadest sense to cover all applications of the mathematical, physical, chemical, medical, and biological science to the problems of personal and public hygiene." The serial publication is to be supplemented by monographic reports from time to time on the results of the more comprehensive studies. The first issue contains articles as follows: "The Development of the Japanese Blood-Fluke, *Schistosoma japonicum* Katsurada, in Its Final Host," by William W. Cort; "The Action of Light on the Leucocyte Count," by Janet

Howell Clark; "An Experimental Study of the Intracranial Parasitism of the Living Fluke, *Paragonimus westermanii*," by Sadamu Yokogawa and Susumu Suyemori; "On the Relationship of Infection by Hookworm to the Incidence of Morbidity and Mortality in 22,842 Men of the United States Army at Camp Bowie, Texas, from October, 1917, to April, 1918," by Charles A. Kofoid and John P. Tucker; and "Recent Experimental Studies on Yellow Fever," by Hideyo Noguchi.

## NOTED HEALTH WORKER PASSES

THE history of public health in this country extends over only the last forty years. During this entire period no one man has had a greater share in its development than Professor William T. Sedgwick, who died in Boston on January 25. He graduated from Yale in 1877 and received his degree as Doctor of Philosophy from Johns Hopkins in 1881. In 1883 he went to the Massachusetts Institute of Technology, where he served successively as assistant and associate professor, professor, and head of the Department of Biology and Public Health.



WILLIAM T. SEDGWICK, 1855-1921.

He saw the Institute grow from its one building in Copley Square in Boston to the great white college which now graces the bank of the Charles River in Cambridge. He was a friend and biographer of the first president, William Barton Rogers. Many famous men have been pupils of Professor Sedgwick; who does not recognize the names of C.-E. A. Winslow, S. C. Prescott, E. B. Phelps, S. M. Gunn, D. B. Armstrong, W. H. Brown, W. W. Peter, and C. E. Turner, to mention only a few? Professor Sedgwick was also chairman of the Administrative Board of the Harvard-Technology School for Health Officers.

In 1888 Dr. Sedgwick was appointed biologist to the newly established State Board of Health of Massachusetts, a position he held for eight years. His work in investigating the famous typhoid epidemics in Lawrence and Lowell made him the leading epidemiologist of the country. In 1902 he published his "Principles of Sanitary Science and the Public Health," which was the classic on this subject. In spite of the encroachments of time, this book will never be out of date in many respects. His other works include "The Human Mechanism" (with Dr. Hough), a standard textbook on physiology; "General



Biology" (with Dr. Wilson), and "A Short History of Science" (with Professor Tyler), besides many articles in scientific magazines.

To enumerate all the positions of trust held by Professor Sedgwick and the well deserved honors he had attained would require many pages. He received the honorary degree of Doctor of Science from Yale in 1909 and the Doctor of Laws from the University of Cincinnati in 1920. He had been on the advisory board of the United States Hygienic Laboratory since 1902 and was an assistant surgeon general (reserve) of the United States Public Health Service. He was also a member of the International Health Board of the Rockefeller Foundation and of the Public Health Council of the State of Massachusetts. He had served as president of the New England Water Works Association, the Society of American Bacteriologists, the American Society of Naturalists, and the

American Public Health Association. He was a Fellow of the American Academy of Arts and Sciences, Fellow of the American Association for the Advancement of Science, Fellow of the Royal Sanitary Institute, Curator of the Lowell Institute, and a trustee of many institutions. A year ago he went to England as exchange professor and delivered lectures at Cambridge and the University of Leeds. He was interested in many civic movements and always stood for the best things in government.

The highest honor possessed by Professor Sedgwick, however, was the universal love and respect of his fellowmen. His personality inspired his pupils and associates; his encouragement made a man want to achieve; his friendship was something to be proud of. As the years come and pass in the corridor of time, this esteem and love shall endure to memory's end. What greater glory can man have than this?

JAMES A. TOBEY.

## THE CONTROL OF SMALLPOX

By JOHN N. FORCE, M.D., GR.P.H., SPECIAL EXPERT, UNITED STATES PUBLIC HEALTH SERVICE, WASHINGTON, D. C.

THAT smallpox is extremely prevalent in the United States is evident from the following table of cases reported to the United States Public Health Service from twenty states during the years 1915-1920.

As an example of the rapidity of increase may be cited

which slowly spread over the country. On the Atlantic Coast this disease was in such close relation with the Spanish-American War that it received the name "Cuban Itch," while on the Pacific Coast its appearance, coinciding with the later operations in the Philippines, suggested

TABLE I.—SMALLPOX IN GROUPS OF STATES, 1915 TO 1920  
Cases and Case Rates per Thousand of Population.

	1915		1916		1917		1918		1919		1920	
	Cases	Rates	Cases	Rates	Cases	Rates	Cases	Rates	Cases	Rates	Cases	Rates
Four Eastern States	543	0.04	366	0.02	828	0.06	749	0.05	311	0.02	563	0.04
Seven Southern States	5,186	0.46	2,932	0.26	3,950	0.34	10,284	0.88	7,341	0.62	10,907	0.92
Six Central States....	13,981	0.79	8,666	0.48	19,355	1.06	32,200	1.75	18,573	0.99	33,242	1.74
Three Pacific States..	1,169	0.24	990	0.20	841	0.16	3,238	0.61	9,021	1.66	13,266	2.38

the cases reported to the California State Board of Health during the years 1916-1920. In 1916 there were 248 cases reported; in 1917, 329 cases; in 1918, 1,100 cases; in 1919, 2,053 cases; and in 1920, 4,486 cases, the last figure representing an eighteen-fold increase of the disease in five years.

Studies of the age distribution of the California cases for the years 1916, 1918, and 1919 show that in 1916 half of the cases occurred before age 22; in 1918, half before age 20; and in 1919, half before age 17. In 1916 the case rate for children per thousand of total population was only slightly greater than for adults; in 1919 the case rate for children was twice that of adults. These statistics show not only a remarkable increase in smallpox during the last few years, but that this increase has been principally among the children. This general prevalence, as well as the local increase and changes in age distribution, is attributable to two causes—errors in diagnosis, and neglect of juvenile vaccination. Conversely, the control of smallpox in a community depends on accurate diagnosis and supervision of the disease, associated with prompt and efficient vaccination.

In 1896 there appeared in Florida a mild form of smallpox, apparently not of the variety described in textbooks, the name "Manila Itch." The mistake in diagnosing this mild smallpox, either as a new disease of tropical etiology,

or as chickenpox, has allowed many epidemics to attain formidable proportions before the disease took on sufficient textbook characteristics to permit of a true diagnosis.

The following routine practice in the diagnosis of smallpox is not original, but may be found of value by health officials encountering an epidemic characterized by these doubtful cases.

(1) *Visits*.—A few years ago it was considered sufficient for representatives of health departments to see adult cases notified as chickenpox for the purpose of confirming the diagnosis. At that time the child population was fairly well vaccinated, but many previously vaccinated adults were no longer immune. Chickenpox was primarily a children's disease, and a case occurring in an adult was always suspected of being smallpox.

At present, as has been shown, smallpox is rapidly tending to become a children's disease, and alert health officials should confirm the diagnosis in every case notified as chickenpox.

The person making the visit should check dates of exposure, onset of symptoms, beginning of eruption, etc. A supply of investigation forms should be carried. In planning these forms care should be taken not to overload them with a mass of detail, and, on the other hand, to omit nothing contributory to the diagnosis. For example,

"Sanitary condition of premises" conveys no information in an investigation of smallpox, while "History of chickenpox" is of great significance. Some investigation cards are provided with four outlines of the human figure—front, back, left side, right side—which are convenient for rapidly shading in the distribution of the eruption.

(2) *History*.—The date and character of onset should be ascertained, including history of chill, fever, backache, headache, and vomiting. The duration of this pre-eruptive stage is of importance, being usually about three days. Inquiry should be made as to the *date of eruption* and the region where first seen.

The investigator should obtain the *history of exposure* to any eruptive fever; smallpox cases usually have an incubation period of twelve days, perhaps slightly longer in the mild type. As the eruption appears with great regularity on the third day of the disease, about two weeks before this date may be safely taken as the time of exposure. If the patient was outside the jurisdiction of the local health officer at the time of exposure, his whereabouts should be carefully ascertained in order that the health officer of the jurisdiction in which the exposure took place may be notified and perhaps assisted in the discovery of an unsuspected focus of smallpox.

A note should be made of the condition of the patient; smallpox patients in the early eruptive stages are fairly comfortable as compared with their pre-eruptive state. The history of chickenpox and the vaccination history should be obtained. From the statements of the patient a history will be secured about as follows:

Patient, colored, 25, laborer; history taken Wednesday. Two weeks ago, Sunday, went to see cousin sick with chickenpox; patient had had chickenpox, so was not afraid. Last Friday, while at work, had a chill and began to have severe headache and pain in the back. Came home, took salts and went to bed. Saturday no better, so called a doctor, who pronounced it "grip" and left medicine. Saturday night ate strawberries, which he vomited. Sunday not much change, but awoke Monday morning feeling "fine" and decided to go to work. While shaving noticed "pimples" on forehead and around mouth. Patient feels fairly well, except for slight itching. He was first vaccinated two years ago in the army, but has only a pigmented spot, with no pits.

Had this been a case of chickenpox the history would have been about as follows:

Assuming the same exposure, the patient would have noticed a chilliness and perhaps headache and general malaise Sunday afternoon. On Monday morning he would have awakened feeling worse and would have discovered the eruption. Fever would accompany the eruption and the period of remission so characteristic of the early eruptive stage of smallpox would be absent.

(3) *Distribution of eruption*.—Having obtained the history, the investigator should require the patient to strip to the waist. No satisfactory estimate of the distribution of the eruption can be made from inspection of the hands and face. The investigator should not consider single lesions or groups of lesions at this time, but should stand far enough away from the patient to form an estimate of the regional distribution of the eruption as a whole. If the patient is required to cross the arms, place the hands on opposite shoulders, and flex the head on the chest, the regions most invaded by the smallpox eruption will be brought together, i. e., the face and forearms. If the patient then opens wide the arms, holding them out from the body while throwing back the head to expose the chest and neck, the regions least invaded by smallpox will be brought to view, i. e., the chest, neck, and upper arms. It will be noted that the axilla is practically free from the eruption. The contrast between invaded and comparatively free surfaces presented by the above pro-

cedure is very striking. Chickenpox eruptions, on the other hand, invade the chest, neck, axilla, and upper arm, the lesions being fewer on the forearm than on the upper arm. *Either* eruption may appear on the palms and soles. Smallpox may appear a day or so later on the hands than on the face, consequently an attempt to make a diagnosis without stripping the patient may result in disaster.

(4) *Character of the eruption*.—The textbook description of the smallpox lesion is familiar to all. Much stress is laid on the "shotty" feel of smallpox contrasted with the "blister-like" chickenpox eruption, and the successive crops of chickenpox lesions are contrasted with the single stage of development shown by the lesions of smallpox in any region of the body. Much has also been written about umbilicated and multilocular lesions in smallpox. In the presence of a mild type of smallpox, or one influenced by previous vaccination, many of these distinctions either disappear or become hard to discern. Usually in chickenpox, especially in the skin folds, e. g., on the lower abdomen, a few large oval vesicles may be seen. These furnish a sharp contrast to the round lesions of smallpox. The presence or absence of umbilication is not a safe guide. It may be necessary to depend on the history of the case and the distribution of the lesions rather than on the differentiation of the lesions themselves. With a total of twenty lesions on the body surface, not much can be discovered about successive crops, but if fifteen of these lesions are on the forearm and face, and they appeared after a two days' attack of "grip," there is little doubt as to the diagnosis.

(5) *Tracing contacts*.—After being satisfied as to the diagnosis of smallpox, the next duty of the investigator is to ascertain the names and addresses of all persons with whom the patient has been in contact during the pre-eruptive and early eruptive stages. The contacts during the early eruptive stage may be hard to locate because, in many instances, the patient returns to school or work when the pre-eruptive symptoms have passed.

The contacts should be followed up, vaccinated, and kept under observation for from two to ten days, until evidence of immunity is secured, as described below in the section on immunity. Contacts refusing vaccination should be quarantined for a period of two weeks dating from the last exposure.

(6) *Disposal of the patient*.—A smallpox patient isolated from contact with all but the recently immunized is no more a menace to the public than a yellow fever patient in a well screened bed. The question of removal to a contagious disease hospital is one of expediency. The contagious disease hospital is more of an economic ally of the afflicted family than a protection to the public health, as was formerly believed before the part played by carriers and missed cases was so well understood. The necessity for removal is of course always indicated where family quarters are crowded or the patient is an inmate of a hotel, boarding house, or club. Nothing is gained by the quarantine of immunes; in fact, the tendency to strict family quarantine in smallpox is responsible for the concealment of many mild cases.

It has been stated that 4,486 cases of smallpox were reported to the California State Board of Health in 1920. Definite histories as to vaccination or lack thereof were secured from 4,226 of these cases. Only 1 per cent had been vaccinated during the five years immediately preceding the attack of smallpox; 7 per cent had been vaccinated more than five years before; while 92 per cent had never been vaccinated.

It is easy to secure testimony that vaccination prevents smallpox, but hard to overcome a disposition on the part

of the public to regard variola and vaccinia as two evils, both to be avoided if possible, and when avoidance is no longer possible, to determine which is the lesser.

Formerly the fear of smallpox caused people to regard vaccinia as the lesser evil, but there seems to be little fear of the present mild smallpox and much fear of vaccinia, arising from family experiences with vaccination performed by ancient methods, unfortunately still too prevalent. It is the duty of public health officers, physicians, and public health nurses to combat the reasonable objections to vaccination by demonstration of the harmlessness of the modern procedure, some details of which will now be considered:

(1) *Smallpox vaccine*.—Smallpox vaccine consists of a suspension in aqueous solution of glycerin of living smallpox organisms, modified by having been grown on calves. The result of this propagation on the calf has rendered the organism incapable of reproducing clinical smallpox. Only by direct inoculation of the vaccine on the derma can the characteristic vaccinia lesion be produced, through the multiplication of the inoculated organism to form a colony whose growth stimulates antibody formation in the vaccinated person. Every detail of the manufacture of smallpox vaccine is safeguarded through inspection and regulation by officers of the United States Public Health Service. The purity of the product is beyond question, but its potency is largely influenced by the care it receives after leaving the producing establishment. Smallpox vaccine withstands the lowest temperatures experimentally produced, but the living organisms are destroyed in a comparatively short time at body temperature. Public confidence in the efficacy of vaccination is not enhanced if packages of vaccine are left near a steam pipe in a mail car, placed on a shelf in a jobber's warehouse, thrust into a drawer in the retail pharmacy, and finally carried in a bag on the floor of the physician's machine. Persons naturally immune to vaccinia are extremely rare, in fact much rarer than is generally supposed. The vaccinator should bear this in mind; if vaccinia is not uniformly produced in previously unvaccinated subjects, the vaccine is probably at fault, and the vaccination should be repeated with a product which has been kept on ice as much as possible since leaving the producing establishment. Health officials vaccinating during epidemics should provide means whereby the vaccine taken into the field may be iced up to the moment of use.

(2) *Technic of vaccination*.—The vaccine colony grows on the derma, under the unbroken epidermis. It is possible to vaccinate intracutaneously, using the technic of the Schick test. It is, however, easier and much safer to break the epidermis and bring the vaccine in contact with the derma. The epidermis may be broken by the single scratch of a needle, or better, by removing a tiny portion of epidermis by the rotation of a vaccination chisel, held perpendicularly, leaving exposed a circle of derma 3 mm. ( $\frac{1}{4}$  inch) in diameter. Three scarifications, at least 5 cm. (2 inches) apart, should insure against failure of technic, and will result in scars each 10 mm. ( $\frac{3}{8}$  inch) in diameter, much less disfiguring than the scar produced by necrosis, the result of cross-scarification. The vaccine must grow in unbroken skin, so nothing is gained by a single cross-hatched denuded area which could not have been secured by dividing this area into several smaller portions. Some vaccinators advise scarification through the drop of vaccine, but it is harder to observe the character of the scarification when this is done. The vaccine should be dropped on the scarified area and worked in lightly with the flat of the vaccination chisel, or a sterile toothpick. The skin may be cleansed

with alcohol previous to vaccination, but the vaccination chisel should be sterilized by dipping in alcohol and burning off. It is best to vaccinate on the arm; no vaccination should be done on the leg. It is not necessary for the vaccinated area to be dry before rolling down the sleeve. If the single needle scratch or the vaccinating chisel is used, sealing of the trauma is almost immediate and the vesicles resulting from the small insertions are not readily broken. There is, therefore, no need of a dressing for protection, and, indeed, the dangers resulting from dressings outweigh any advantages. Dressings furnish excellent incubator facilities for pyogenic organisms. Vaccination shields are especially dangerous and should never be employed. Not only do they fail to give protection against trauma, but any constriction over or near the vaccinated area causes edema and maceration. The bare arm should not be exposed to direct sunlight for a few hours after vaccination.

(3) *Immunity*.—The object of vaccination is to secure immunity against smallpox. This immunity is verified not by large, disfiguring scars, but by careful observation of the reactions following vaccination. Vaccination and revaccination should be continued until evidence of immunity is secured. No vaccinator is justified in assuming that a subject is immune because several attempts to vaccinate have appeared unsuccessful when observed at the end of a week, but much time and vaccine are wasted in the revaccination of immune persons.

Immunity is established as soon as antibodies are formed, which, in the case of a previously unvaccinated person, is usually on the tenth day following vaccination. This antibody formation may be accelerated, depending on the degree of sensitization of the subject through previous vaccination. Whenever antibody formation reaches a certain height the growth of the vaccine organism is arrested. Thus, a group of persons with varying degrees of immunity before the vaccination, will exhibit at the time of this arrest lesions ranging from primary vaccinia characterized by an 11 mm. vesicle surrounded by a 35 mm. areola at its height on the tenth day; through the secondary vaccinia (vaccinoid) with a 6 mm. vesicle surrounded by a 20 mm. areola on the fifth day; to, finally, most significant of all, the 7 mm. areola, with or without a papule on the second day, which marks the reaction of highest immunity.

If vaccinations are not observed until the seventh day, this immediate reaction of immunity will have disappeared and the vaccinator will be in doubt as to whether the "unsuccessful" vaccination is due to immunity or to impotent vaccine. A fifth day observation is better than a seventh day, for a slight brownish pigment may mark the site of the receding reaction of immunity. Any doubtful result should indicate the necessity for revaccination and observation at the end of forty-eight hours.

A person submitting to vaccination is entitled to a full measure of protection. Assurance of this can only be afforded by the observation of one of the manifestations of vaccinia described above.

The control of smallpox depends on diagnosis and vaccination. It is important that certain mild types of smallpox now prevalent in the country should be recognized, and not confused with "grip" or chickenpox. Vaccination of contacts is far more important in checking the spread of smallpox than quarantine and disinfection. Vaccination depends for its success on a supply of fresh, cold virus; the use of small multiple scarifications in preference to a single, large cross-scarification; and, finally, the recognition of the difference between a failure due to impotent vaccine and the reaction of immunity.

# DIETARY HYGIENE AS TAUGHT BY MUSEUM METHODS\*

BY MARY GREIG, DEPARTMENT OF PUBLIC HEALTH, AMERICAN MUSEUM OF NATURAL HISTORY, NEW YORK CITY

IT IS not possible or profitable to try to remember the individual values of each food. Therefore, we group foods according to the general type of nutritive need which they supply. No one group of foods furnishes a complete diet because each lacks some essential thing. Whenever it is necessary to economize in the diet, we must rely chiefly upon the grain products for nourishment since they give us energy at a low cost and a cheap, although not completely adequate, supply of proteins. These foods, however, lack calcium and are deficient in vitamins. Therefore they must be supplemented by foods which supply these essentials.

Milk is the food richest in calcium and it supplies also the fat-soluble vitamins and the indispensable animal proteins. Vegetables are rich in mineral salts; they promote a healthy condition of the intestines; and some vegetables are important sources of vitamins.

These three food groups—grain products, milk, and vegetables—when taken together, form an excellent foundation diet which can be further supplemented by other foods.

Meat, fresh fish, poultry, eggs, and most fresh fruits must play a minor part in a low priced diet. They are good foods, but they supply no nutritional needs which cannot be met more cheaply in other foods.

Table III of the school exhibit sums up the essential facts in regard to the special values of various classes of foods. It will be noted that:

\*Part I of this article appeared in the February issue.

The cheapest sources of energy are the grain products and legumes, sugars, and fats. The grain products are deficient in certain kinds of protein and in calcium; sugars and fats contain neither proteins nor salts.

The most complete proteins are supplied by meats, milk, and eggs. Calcium is best supplied by milk and green vegetables; iron by meat, eggs, vegetables, and fruits. Milk, butter, eggs, and green vegetables are the best sources of the fat-soluble vitamins. The water-soluble vitamin B is found in most foods though lacking in sugar and butter and not abundant in root-vegetables and highly milled grain products. The antiscorvy vitamin is best obtained from oranges and tomatoes, though present in most fresh foods.

Foods are made up of the following (1) Constituents which supply no energy: (a) water; (b) refuse and (c) mineral salts; (2) constituents which supply energy: (d) carbohydrates—sugars and starches; (e) proteins—nitrogen containing material; and (f) fats.

The mineral salts and water are valuable as building materials. The last three constituents listed above contribute energy as well as building materials. Carbohydrates and proteins furnish the same amount of energy per ounce or gram (113 calories per ounce or 4 calories per gram); but fat furnishes more than twice as much energy as either (255 calories per ounce or 9 calories per gram).

Goods vary enormously in the relative amounts of these constituents. This may be illustrated by setting up the

TABLE III SPECIAL VALUES OF VARIOUS FOODS

	Energy	Protein	Mineral Salts	Fat Soluble A	Water Soluble B	Anti-Scorvy C
Grain products and dried beans and peas, . . . . .	Cheapest source.	Cheap source, but deficient in certain necessary kinds of protein.	Good source of certain salts, but lacking in calcium.	Variable.	Present except in highly milled grains.	Lacking.
Meats . . . . .	Costly source but depends largely on cut.	Contain proteins of good quality.	Source of iron but lacking in calcium.	Abundant.	Present.	Very low content.
Root vegetables . . . . .	Fairly cheap source.	Contain certain proteins but inadequate as sole source.	Good source.	Variable.	Not abundant.	Present usually abundant.
Sugars . . . . .	Very cheap source.	Lack proteins.	Lack salts.	None.	None.	None.
Fruits . . . . .	Fresh fruits expensive source. Dried fruits fairly cheap source.	Poor source.	Fresh fruits costly source; dried fruits cheap source.	Unknown.	Present.	Abundant, especially in orange, lemon and tomato.
Nuts . . . . .	Cheap source.	Fairly cheap proteins but inadequate as sole source.	Good source.	Unknown.	Unknown.	Lacking.
Milk . . . . .	Fairly cheap source.	Good quality proteins.	Best source.	Abundant (milk is the best source of this vitamin).	Present.	Present.
Leaf vegetables . . . . .	Very little energy value.	Fairly good source.	Valuable source, especially calcium and iron.	Abundant.	Present.	Present usually abundant.
Butter . . . . .	Cheap source.	Lacking proteins.	Poor source.	Abundant.	Lacking.	Lacking.
Eggs . . . . .	Expensive source.	Expensive source, but contain proteins of excellent quality.	Rich in mineral salts. Lower than milk in calcium.	Abundant.	Present.	Unknown.

TABLE IV.—THE CHILD'S DAILY DIET  
Examples of Foods That Make Up a Healthful Breakfast

Necessary types of food	Calories to be supplied by each type	Amounts of food that supply the necessary number of calories
Fruit .....	50-100	Apples ..... $\frac{1}{2}$ to 1 or bananas ..... $\frac{1}{2}$ to 1 or oranges ..... $\frac{3}{4}$ to $1\frac{1}{2}$ or Malaga grapes..... 10 to 20
Cereal .....	100-150	Rolled oats..... 1 to $1\frac{1}{2}$ c. cooked or cornmeal ..... or flaked wheat..... $\frac{2}{3}$ to 1 c. or cornflakes ..... or puffed rice..... $1\frac{1}{2}$ to 2 c. or shielded wheat..... 1 to $1\frac{1}{2}$ biscuits
Bread .....	50-100	Whole wheat ..... 1 to 2 slices or white bread.....
Butter or butterine.....	50-100	Butter or butterine..... $\frac{1}{2}$ to 1 Tbs.
Milk, or cocoa made with milk.....	100-150	Milk ..... $\frac{2}{3}$ to 1 c. or cocoa made with milk ..... $\frac{3}{5}$ to 1 c.
Total .....	400-600	

TABLE V.—THE CHILD'S DAILY DIET  
Examples of Foods That Make Up a Healthful Dinner

Necessary types of food	Calories to be supplied by each type	Amounts of food that supply the necessary number of calories
Meat, fish or eggs.....	75-300	Lamb stew ..... 1 to 3 small pieces, $\frac{1}{3}$ oz. or eggs ..... 1 egg 70 calories or chicken ..... 1 to 3 slices (slice 2 x 4 x $\frac{1}{4}$ inches)
Potatoes, rice, macaroni, etc. ....	100-200	White potato ..... 1 to 2 medium or sweet potato..... 1 to 2 small or boiled rice ..... $\frac{3}{4}$ to $1\frac{1}{2}$ cups
Fresh vegetables .....	25-50	Spinach ..... $\frac{1}{2}$ to 1 cup, cooked or carrots ..... 1 to 3 medium or turnips ..... $\frac{1}{2}$ to 1 c., sliced or tomatoes ..... $\frac{1}{2}$ to 1, medium or cauliflower ..... $\frac{1}{8}$ to $\frac{1}{4}$ head
Milk .....	100-150	Milk ..... $\frac{2}{3}$ to 1 c.
Bread .....	100-	White bread ..... 2 slices
Butter .....	100-	Butter ..... 1 Tbs.
Pudding or similar dish.....	200-300	Rice pudding ..... or apple tapioca ..... or cornstarch blancmange or Brown Betty pudding or ice cream ..... $\frac{1}{2}$ to $\frac{3}{4}$ cup
Total .....	700-1,200	

Key: C. cup; Tbs. tablespoon; t. tea-spoon.

TABLE VI.—THE CHILD'S DAILY DIET  
Examples of Foods That Make Up a Healthful Supper or Lunch

Necessary types of food	Calories to be supplied by each type	Amounts of food that supply the necessary number of calories
Cream soup or similar dish. ....	200-300	Cream of tomato..... or celery or spinach..... or asparagus or pea..... or split pea or bean soup or mashed or creamed potatoes ..... or boiled macaroni..... 1 to $1\frac{1}{2}$ cups
Bread .....	50-100	White or whole wheat..... 1 to 2 slices
Butter or butterine.....	50-100	Butter or butterine..... $\frac{1}{2}$ to 1 Tbs.
Stewed fruit.....	100-200	Stewed prunes..... about 2 to 5 prunes and 2 to 4 Tbs. juice or apple sauce..... $\frac{1}{2}$ to 1 cup or stewed apricots..... $\frac{1}{4}$ to $\frac{1}{2}$ cup
Cake .....	50-100	Plain cookies, 2 $\frac{1}{4}$ in. diam. or lady fingers..... 1 to 3 or 1-egg cake, 2-in. cube $\frac{1}{2}$ to 1 cube
Milk, or cocoa made with milk. ....	100-	Milk ..... $\frac{2}{3}$ cup or cocoa made with milk ..... $\frac{3}{5}$ cup
Total .....	400-800	

Key: C. cup; Tbs. tablespoon; t. teaspoon.

colored blocks which show the composition of seven common foods and comparing them for any one constituent; for instance, notice the difference in water content. Supplement this demonstration by data for other foods from Bulletin 28 already referred to.

Those foods that have large amounts of either refuse or water in them will not usually furnish much energy per pound. Those foods that contain large amounts of fats will be the foods highest in energy. For example, peanuts are about 25 per cent refuse (shells) and one would expect them to be low in energy value; but, on the other hand, they contain very little water, only 7 per cent, and one-third of their substance consists of fat. These two constituents counterbalance the shells which constitute refuse and as a result very few foods give us as much energy per pound (1,900 calories).

### The Daily Diet

Perhaps the most convenient manner of regulating our food properly is by means of the food plan or dietary—a rough outline to which all meals should conform.

Many food plans have been issued. A very good one is the following which is adapted from one issued by the Nutrition Division of the Department of Agriculture.

A daily diet plan for the school child from 10 to 13 years of age prepared by the Department of Health of the American Museum of Natural History is presented in Tables IV, V, and VI.

The fundamental essentials of dietary hygiene have been put in a still simpler form, designed especially to appeal to the child himself in Table IX and Fig. V.

Similar diets for younger children and infants may be found in Professor Rose's "Feeding the Family."

An example of the three meals indicated in Tables IV, V, and VI can be made up by combining the models included in the food exhibit as follows:

DAILY DIET FOR ADULT MAN

	Moderate priced	Cheap
Vegetables and fruits.....	2½ lbs.	1½ lbs.
Milk .....	1 pt.	1 pt.
Meat, eggs, cheese, etc.....	12 oz.*	1 oz.*
Cereals .....	8 oz.	16 oz.
Sugar and syrups.....	3 oz.	1½ oz.
Fats .....	3 oz.	1½ oz.
Water .....	about 1 qt.	about 1 qt.

\*Use 2 ounces less of these for each half pint of milk used.

TABLE VIII.—FOODS THE CHILD NEEDS EVERY DAY

Milk .....	One quart a day.
Cereals .....	These foods should furnish about ¼ to ½ of the daily supply of energy. The following amounts would give this: 1 to 2 cups of cooked cereal, 6 slices of bread, and ½ cup of cereal pudding.
Fresh vegetables.....	One cupful at least of cooked fresh vegetables.
Fat .....	About 3 to 4 tablespoons. If a quart of milk is used, some other fat may be substituted for butter.
Fruits .....	Once a day at least. If fresh fruits are expensive use stewed dried fruits. Fruits should be cooked for the evening meal and at all meals for children under six.
Water .....	4 or 5 glasses.

TABLE VII.—THE CHILD'S DAILY DIET  
Calorie, Protein, and Salts Value of Typical Foods

Breakfast	Amounts	Calories	Protein grams	Calcium grams	Phosphorus grams	Iron grams	Cost May, 1920
Oatmeal .....	1 c. cooked	100	4.20	.017	.029	.0010	.004
Toast .....	2 slices	100	3.50	.011	.035	.0003	.009
Butter or butterine.....	1 Tb.	100	.13	.002	.002	....	.013
Cocoa .....	3 5 c.	100	2.70	.080	.080	....	.02
Baked apple with sugar.....	1 apple	100	.48	.009	.015	.0004	.05
Milk .....	2 3 c.	100	4.75	.174	.134	.0003	.02
		600	15.76	.293	.365	.0020	\$.096
<b>Dinner</b>							
Lamb (stew).....	1½ oz.	100	6.33	.003	.060	.0010	\$.017
Potato .....	1 medium	100	2.65	.016	.069	.0016	.019
Spinach .....	1 c. cooked	50	4.39	.140	.112	.0075	.081
Whole wheat bread.....	2 slices	100	3.95	.020	.071	.0006	.009
Butter or butterine.....	1 Tb.	150	.13	.002	.002	....	.013
Milk .....	1 c.	150	7.10	.260	.200	....	.050
Rice pudding.....	1 2 c.	200	5.80	.160	.110	....	.030
		800	30.02	.601	.681	.0107	\$.199
<b>Supper or Lunch</b>							
Cream of tomato soup.....	1 c.	200	5.40	.159	.120	....	\$.647
Bread .....	2 slices	100	3.50	.011	.035	.0003	.009
Butter or butterine.....	½ Tb.	50	.06	.001	.001	....	.006
Stewed prunes.....	5, and 1 Tbs. sauce	200	1.40	.040	.070	.0020	.010
Milk .....	1 c.	150	7.10	.260	.200	....	.050
Cookies .....	2	100	1.20	.462	.020	....	.010
		800	18.66	.416	.416	.0023	\$.142
Totals .....		2,200	64.41	1.356	1.495	.015	\$.437
Needs—10-13 years .....		1,800 to 2,500	45 to 62	.41 to .58	.86 to 1.2	.009 to .013	....

PERCENTAGE COMPOSITION OF CERTAIN COMMON FOODS

	Refuse	Water	Protein	Fat	Carbohydrate	Salts	
Sugar .....	....	....	....	....	100 (12)	....	
Butter .....	....	11 (1.3)	1 (0.1)	85 (10.2)	....	3 (0.4)	
Beef .....	8.1 (1)	61.1 (7.7)	19.5 (2.4)	7.3 (0.8)	....	1 (0.1)	
Bread .....	....	35.6 (4.3)	9.3 (1.1)	1.2 (0.1)	52.7 (6.4)	1.2 (0.1)	
Apple .....	25. (3)	63 (7.7)	.3 (0.04)	.3 (0.01)	10.8 (1.3)	.3 (0.4)	
Milk .....	....	87 (19.5)	3.3 (0.4)	4 (0.4)	5 (0.6)	.7 (0.1)	
Spinach .....	....	92.3 (11.1)	2.1 (0.3)	.3 (0.04)	3.2 (0.4)	2.1 (0.2)	
		Brown	Green	Red	Yellow	Blue	Black

Note:—The figures in parenthesis indicate the height in inches of the blocks used when calculated on a basis of 1 foot = 100%. The colors are those used in the museum exhibit.

### Food Budget Apportioned

A very useful way to find out whether the diet is well-balanced is to compare the amount of money spent for the different groups of foods.

The average person of limited income spends nearly half of his income for his food. The annual expenditure for this purpose in the United States runs well over seven billion dollars annually.

In New York City fifty cents a day is the lowest sum which will enable an adult to buy adequate nourishment in the form of raw food.

The proper way to apportion the money spent for food when living on a medium income is cited from Prof. H. C. Sherman in the second column of the Food Budget Table. The first column shows the manner in which the average American family, as represented in 208 dietary studies, actually spends its food money. The contrast between the two sets of figures indicates the changes we ought to make in our diet. The third column shows the proper apportionment of money in an adequate family diet for 1920 on an income slightly above the minimum, as planned by the Department of Public Health of the Museum. In a minimum diet the amount of money spent for cereals and breads may be one-fourth of the whole amount spent for food, and eggs will play a smaller part than would be the case if more money could be spent for food.

For the reason that the prices of sugar and fresh vegetables and fruits went up disproportionately in 1920, the figures for these items are higher in the last column than they would be in normal times. The adjustment was made by spending less money for meat and fish.

The main essentials of an adequate and economic diet are presented on this budgetary basis in the exhibit on Food Hygiene installed in permanent form in the American Museum of Natural History by the following diet list for a family of five for a week:

The main essentials in the program for securing a more



adequate diet at a minimum cost may be stated in a single sentence. Restrict expenditures for meat, fish, poultry, sugar, and fats, and spend more money upon vegetables and fruits—and, particularly—upon milk.

FOOD BUDGETS

Food groups	How the Food Budget is spent (Sherman) Per cent	How the Food Budget should be spent (Sherman) Per cent	How it should be spent on a low income in 1920 A. M. N. H. Per cent
Meat, poultry, and fish	34.	10-15	8.61
Eggs	5.7	5-7	2.36
Milk	9.6	20-30	22.08
Cheese	1.	2-5	3.39
Fats	8.6	10-12	9.93
Breads and cereals	17.	12-15	15.29
Sugars and syrups	4.5	about 3	5.67
Vegetables and fruits	15.	15-18	20.75
Miscellaneous	3.8	.....	.....

With the accumulation of records of metabolism measurements it has become possible to work out basal values for people of all ages and to establish curves for the general trend of metabolism. General deductions have been charted and norms worked out whereby the factors which affect nutrition are brought under observation and control.

## RESPONSIBLE FOR CHILDREN'S TEETH

In response to numerous requests for information pertaining to the establishing of school dental clinics, an article was published in *Public Health Reports* of November 19, under the signature of Taliaferro Clark of the Public Health Service, setting forth in full a practical plan for the organization of protective and remedial dental work. This could be carried out either through centralized clinics or itinerant school clinics. The necessary equipment is itemized and estimates of costs are made. Emphasis is placed upon diet as an important factor in making teeth resistant to decay.

Mouth hygiene is asserted to be a business proposition bringing more than adequate returns for any outlay in a reduction in the percentage of retarded children in assuring better growth and development of the children and by assuring better physical types. With such treatment as makes the retention of diseased teeth safe for the children, or the removal of teeth supposed to be the source of infection which do not respond to routine treatment, we strike at the etiology of many of the more common maladies which lower the vital resistance and affect unfavorably the development of children. Adequate preventive measures demand dental service for children.

FOOD FOR A FAMILY OF FIVE FOR A WEEK-- APRIL, 1920

Food	Pounds	Protein	Calories	Calcium	Phosphorus	Iron	Cost
Chuck steak.....	2½	166.5	1,305	.0966	1.795	.0249	\$ .45
Stew (lamb).....	2	136.0	2,254	.0789	1.466	.0204	.32
Salt cod.....	1	86.2	361	.0910	.989	.0047	.32
	5½	388.7	3,920	.2665	4.250	.0500	\$1.09 (8.61%)
Eggs, ½ doz.....	3½	40.5	416	.2007	.545	.0091	\$0.30 (2.36%)
Milk, 21 qts., 7 loose, 14 grade B.....	46	686	14,144	25.1326	19.356	.0506	\$2.80 (22.08%)
American cheese.....	1	130.8	1,990	4.2188	3.194	.0060	\$0.43 (3.39%)
Butterine.....	3½	15.9	12,219	.2444	.244	.0036	\$1.26 (9.93%)
Sugar.....	4		7,260	.....	.....	.....	\$0.72 (5.67%)
Bread.....	12	500.8	14,184	1.5602	4.964	.0496	\$1.20
Flour.....	2	120.6	3,246	.1948	.844	.0075	.16
Rolled oats.....	2	146.0	3,622	.6157	3.586	.0318	.15
Rice.....	1	36.3	1,501	.0159	.330	.0011	.17
Cornmeal.....	½	20.9	810	.0405	.129	.0024	.04
Tapioca.....	½	9	804	.0322	.201	.0036	.08
Macaroni.....	1	60.8	1,625	.0975	.650	.0054	.10
Cocoa.....	½	12.3	288	.0649	.104	.0015	.04
	19½	898.6	26,164	2.6217	11.508	.1089	\$1.94 (15.29%)
Potatoes.....	15	122.5	4,530	.7248	3.126	.0707	\$0.65
Carrots.....	2½	10.2	395	.1898	.399	.0053	.25
Beets.....	2	11.8	334	.2138	.281	.0043	.24
Spinach.....	2	19.1	218	.6126	.621	.0327	.40
Can tomatoes.....	2	10.9	206	.1930	.233	.0036	.19
Dried beans.....	1	102.1	1,565	.7356	2.144	.0318	.12
Dried pears.....	1	111.6	1,611	.4489	1.933	.0266	.16
	25½	388.2	8,859	3.2985	8.737	.1750	\$2.01 (15.85%)
Prunes.....	1	8.2	1,160	.2088	.406	.0116	\$0.28
Apricots.....	1	21.3	1,260	.2808	.551	.0066	.48
Dates.....	1	8.6	1,416	.2690	.227	.0122	.40
Raisins.....	½	5.2	704	.1338	.268	.0098	.12
Bananas.....	2	7.3	580	.0522	.180	.0035	.15
Apples.....	2	2.7	428	.0512	.086	.0003	.24
Oranges.....	1½	3.4	211	.1857	.084	.0008	.12
	8½	56.7	5,759	1.1905	1.305	.0448	\$1.89 (14.90%)
Peanut butter.....	½	66.5	1,371	.178	1.001	.0049	\$0.14 (1.1%)
Coffee.....	¼	.....	.....	.....	.....	.....	\$0.10 (.78%)
		2,671.9 13% of total calories	82,432	37.3547	59.35	.4529	\$12.68

### GOOD SERVICE FROM MOTOR CLINICS

**T**HIS traveling clinic on wheels is touring Alameda County, under the direction of the Alameda County Tuberculosis Association, and is said to be the first clinic of this kind in California. The clinic goes mostly into the industrial sections where the population is largely foreign and who are prone to neglect to have themselves and children examined. As a result of these examina-



Underwood & Underwood.

Children are given a health inventory.

tions, children who exhibit traces of tuberculosis are taken out of school and put under favorable management to combat the condition. The clinic carries all necessary apparatus for making laboratory tests. It was bought and equipped at a cost of \$15,000, and was made possible through the sale of Red Cross stamps. The nurses and doctors are supplied by each county visited, and their services are free to the patients.

### CANCER DEATHS INCREASE IN MAINE

There were 888 deaths from cancer in Maine last year, which is the largest number of deaths from this one cause to be recorded in a single year since the reporting of vital statistics was inaugurated in this state. Looking backward over the last twenty years, the difference is plainly marked, figures for 1900 giving but 526 deaths from cancer and steadily mounting, with few fluctuations since that time. It was in 1912 that the cancer death rate passed the 800 mark, and in the eight years which have followed has almost reached 900. During this period, 1915 was the low-water mark in cancer mortality, the figure for that year being but 811, but the following year more than offset the slight decrease in reaching 844 deaths, the nearest approach to 1919's record of cancer deaths.

In the period from 1907 to 1911, inclusive, cancer figures held within the 700 limit for yearly deaths, while before that time, back to 1900, the deaths from this cause varied from 526 to 617.

Of the many forms of cancer, cancer of the liver and of the stomach cause the largest number of deaths, undoubtedly because such cancers cannot be reached by the surgeon. Cancer of the female generative organs stands third in the death toll from this disease. While more women than men die of the disease through the peculiar susceptibility of the generative organs to cancer, more cases of cancer of other types are found among men. For example, cancer of the mouth is very prevalent among men, brought on by excessive smoking. Cancer is caused

by chronic irritation of some part of the body, and the clay pipe, which so many men use, is held responsible for many cancers of the lip.

Health workers and physicians throughout the world are concentrating on the cancer problem, and from the aid obtained by vital statistics and from research work some material steps are being taken in handling the disease. Public education of its causes and the need for early treatment is the primary step in the cancer campaign.

### ROCKEFELLER BOARD EXTENDS PLAN

The regular cooperative plan of the International Health Board of the Rockefeller Foundation was enlarged during 1919 and has again been extended to carry the war on hookworm disease and yellow fever into many parts of South America and China. The chief features of their 1919 program were demonstrations in malaria control in Arkansas, Mississippi, and nine additional Southern states; systematic efforts to eradicate yellow fever from Guyaquil, Ecuador. Outbreaks of yellow fever infection in Nicaragua, Honduras, and Salvador were suppressed. The campaign against tuberculosis in France was extended and the measures were continued for the control of hookworm in twelve Southern states and in sixteen foreign countries. Operations under a new public health program were begun in Australia.

The report states that:

During 1919 the first steps were taken looking toward a comprehensive study of public health administration. Preliminary studies were made, dealing with the public health work done by the Children's Bureau, by the Bureau of the Census, and by the Bureau of Education of the Federal Government; a general study of public health administration in Massachusetts was undertaken with the assistance of the State Department of Health; a collection was made of the public health bills which have been presented to Congress, and of the reports of committee hearings and legislative debates on these bills; information on the organization of state, county, city and town health administration, and on the relationship between state and local health authorities, was gathered from the laws and regulations of the various states; data on expenditures for public health purposes by states, cities, and counties were brought together; a special report on hospitals and dispensaries was prepared, and published, and a report on infant welfare work in New York City was revised.

### CHICAGO POLICLINIC EXPANDS

The Chicago Polyclinic and Hospital is to be expanded into a huge institution where all types of cases will be treated and patients will be asked to pay only what they can afford. It will serve as a community health center where special care will be given to children, and it is planned to make it the greatest obstetrical institution in the world. Industrially injured persons will also receive special attention, and all modern appliances for reconstruction will be available. Training schools for nurses are a part of the scheme. Courses in practical and theoretical nursing will be given, as well as special work in x-ray, anesthesia, and laboratory. The purpose of the directors is to provide a place where all may secure the highest type of medical service, and no one in need is to be turned away for reason of lack of funds.

### AMERICAN HEALTH EXHIBIT IN PARIS

The American Society for the Prevention of Tuberculosis, under the direction of the Rockefeller Foundation, maintains an exhibition in Paris as a part of its campaign against the spread of the white plague. The posters are graphically illustrative, the printed descriptions being in French.

# PUBLIC HEALTH NURSING

## Industrial, Social, School, and Rural Nursing, Maternity Care, Child Welfare

KATHERINE M. OLMSTED, R. N., *Editor*

### THE PUBLIC HEALTH NURSE AND THE REHABILITATION OF CRIPPLES

THE present widespread interest in the cripple and the activities inaugurated for his betterment should find stimulus and support from public health nurses and all others who have access to the homes where the cripple is to be found. Someone must discover the cripple and influence him to take advantage of the opportunities publicly provided for physical and vocational rehabilitation.

Every study of cripples in a community has shown that they are hard to locate and, when located, are not easily induced to look with favor upon any plan for rehabilitation. The experience of the federal authorities with wounded soldiers is conclusive proof of the truth of that statement. Even though provided by a generous government with hospital facilities for physical restoration and schools for vocational training and at the same time with a generous allowance for living expenses, large numbers of crippled soldiers could not be found, or, when found, could not be induced to take the advantage offered. One agency reported that only 50 per cent of those who were found could be induced to accept the provision for vocational training for a useful pursuit. One man who had lost a leg expressed the desire "to hibernate."

The cripple who has been dependent for any great length of time is likely to have lost all confidence and ambition. He is too willing "to lie down." This attitude must be changed if he is to take the fine advantages now being offered by public and private agencies. The public health nurse stands in a specially privileged position to discover and aid the cripple. As she makes her rounds she can easily learn of those who are handicapped. Perhaps she will find handicapped men, women, or children in the homes which she visits for the care of some sick person. Having learned of the presence of physical handicaps and having established a contact which is friendly and helpful, she can more readily than others influence the cripple to seek rehabilitation. At least she can bring the facts to the attention of other agencies.

To do this work, the public health nurse needs to have three special equipments. She needs to know the psychology of the cripple; she needs to be a student of physical and vocational restoration so as to see the possible application in each case; and she needs to have a knowledge of all of the public and private agencies which are in a position to provide for rehabilitation.

Equipment with the foregoing knowledge will place the public health nurse in a position of practical influence. If thus equipped, she might well become the emissary of the rehabilitation agencies which provide for physical care, therapeutic appliances, vocational, and retraining.

### MICHIGAN CONFERENCE ON NURSING

UNDER the guidance of the state department of health there has been held a notable conference of representatives of all branches of nursing activities and the proceedings are published in the February issue of *Public Health*, the official organ of the Michigan State Department of Health.

The conference marks the beginning of the Bureau of Child Hygiene and Public Health Nursing in Michigan. It does more than that, according to Dr. R. M. Olin, state health commissioner. "It marks the beginning of systematized nursing throughout the state. It means the building of county nursing systems in counties which now have no nursing service, the establishment of health centers, permanent baby clinics, short term rural training schools where graduate nurses intending to enter public health work may receive instruction while working in the field, and a score of other enterprises that will help to sell health to the people of the state, prevent sickness, and restrict the spread of disease."

In outlining the need for greater health activity, Dr. Olin pointed out the ravages of the common diseases of childhood and the most common diseases of all people in Michigan, including pneumonia, tuberculosis, smallpox, and venereal diseases. He emphasized strongly the nurses' part in the prevention and eradication of these diseases. In vigorous language he says to the nurse: "Urge vaccination, teach vaccination, and assist in every possible way to avert a general epidemic of smallpox in Michigan," and again, when he said: "No greater public health service can be rendered by the nurses throughout the state than that proposed in helping to control venereal diseases."

### NATIONAL FEDERATION OF SETTLEMENTS

The tenth report of the National Federation of Settlements announces the establishment of a national office, an enlarged budget, and increased secretarial service. An urgent need is felt of a regular bulletin and to provide means of communication between members. A statement of housing norms for different types of community indicates itself as a necessary step to secure proper organization of downtown portions of the metropolitan cities.

The results of the Federation's study of the adolescent boy are to be supplemented by a study of needs of little boys and of the expedients found to be most successful in helping them, and it is expected that the results of the technic developed in case work with families above the poverty line, and the organization of leadership of natural groups, will be gathered, digested and made available to all the workers in this field.

# INDUSTRIAL NURSES IN METAL MINING COMMUNITIES\*

By GEORGE MARTINSON, SAFETY INSPECTOR, PICKANDS, MATHER & Co., HIBBING, MINN.

MY EXPERIENCE in the metal mining regions is confined to the Lake Superior district, and particularly to the Minnesota ranges. Therefore, this communication deals with this subject as concerning only this district. However, since conditions are similar throughout the metal mining regions of the United States, some points may be discussed which will be of general interest.

Before considering the question of industrial nurses in mining communities, it might be well to describe the conditions under which our employees live. Approximately one-half of them live in what are commonly called "locations." Locations are communities in which practically all of the houses are owned by the company. They are, as a rule, situated in the vicinity of the mines. Many of these homes have water and electric lights and are rented to the employees at a nominal rate, usually one dollar per month, per room; that is, if a family occupies a five room house they pay five dollars per month, in addition to which they pay a very low rate for electricity and water. All of these homes have large lots, usually 70 by 125 feet, affording plenty of sunlight and air. The remainder of our employees live in villages near the mine. These villages are much cleaner, and more attention is paid to sanitary features in them than in the average municipality. Given these excellent conditions, one ordinarily would assume that the field for the services of a nurse would be limited to caring for the sick and to first aid work. We feel, however, that we have found a much larger field for her services.

## Essentials of True Life

It has been established beyond any doubt that a contented workman is more efficient than one who is discontented. Inasmuch as the success of an industry depends upon the efficiency of its employees, it becomes wise to consider their happiness and contentment. If it is within the power of an organization to remove any cause of inefficiency and unrest, it should be done. There are numerous causes of unrest and they present as many problems and remedies. Not the least of these problems is that of keeping the family contented. Elbert Hubbard said: "True life lies in laughter, love, and work." The metal mining industry is well able to, and has been, furnishing the latter essential to a true life for some time; but what has been done to further the laughter and love?

The larger proportion of our miners are of foreign birth. They have settled in our communities with their families. Their foreign born wives have come to this country, usually leaving their relatives across the water. They have been brought into our midst and have been left to shift for themselves. Having no warm friends, they have missed the social life to which they were accustomed in the country whence they came. Finding no social life, it seemed to them that an insurmountable barrier prevented the enjoyment of the social diversions they craved. If this condition existed for a considerable period, what would be more natural than to have them become disgusted with America and its industries, which, in their minds, were responsible for their unhappiness? This unhappiness would eventually affect the work of the husband; for, instead of having his helpmate meet

him with a smile, he would be greeted with a tale of dissatisfaction. Such conditions, no matter how good the working conditions, or how large the pay check, will eventually cause the man to leave the community for one in which he thinks his family will be satisfied. They will move and find conditions in their new home about the same. After a few more moves, always looking for that better place but never finding it, the workman becomes dissatisfied, also, and he begins to feel that the industry is responsible for his unhappiness, and when this idea begins to lodge in his mind, he becomes a comparatively easy prey for the sleek-tongued agitator.

## Where Rests the Responsibility

It makes no material difference upon whom the responsibility rests. The condition is here. It concerns us as an industry, and we must prevent it. In other words, we must help supply the joy and happiness which will supplant tears with the laughter which is the first requisite of true life. This recalls a few lines by C. E. Bowman:

There is not a place in earth or heaven,  
There is not a task to mankind given,  
There is not a blessing or a woe,  
There is not a whispered yes or no,  
There is not a life, or death, or birth,  
That has a feather's weight of worth—  
Without a woman in it.

The woman in this case I believe to be the industrial nurse.

Assuming that all are agreed that a nurse may prove a profitable investment, and that one or more will be employed, possibly it may be urged that a trained social worker would be more satisfactory. Since the adoption of the Eighteenth Amendment, the liquor question is not acute. There is no great problem of unemployment to deal with, and, as previously stated, with us the housing problem is better taken care of than in most communities. This being true, we can eliminate the idea of a social worker. There is some need, of course, for work of this kind and it is my opinion that we should have a person who will be able to fulfill the duties of a nurse and social worker as well. By virtue of her professional training, the nurse can be of service to the workers at the time when they are in trouble and most responsive to kindness. After having gained their respect and love in this way, she can begin her social duties.

The foreigner, in common with the rest of us, has a certain pride about himself and his home, and the privacy of the home should be respected at all times. It is, therefore, requisite that the nurse have tact in order to get the confidence of the folks with whom she is to deal. Little Joe Krakovich needs a new romper suit, and his mother would love to have him dress like Jim Fisher, who lives next door; but she is unable to cut out the cloth and make it. On a friendly visit the nurse learns of the mother's wish, and assists her. In a few days little Joe is playing with Jim, and looks just as much an American. Are the mother and father pleased? Of course they are. When selecting a nurse for such a community don't forget the qualification that she must be able to do plain sewing. Of course she should be a graduate of some reputable training school and, if possible, one equipped with a good education before going into training should be engaged.

\*Read before the Mining Section of the Ninth Annual Safety Congress, Milwaukee, Wis., September 27 to October 1, 1920.

The nurse should be able to take the lead in the little social gatherings which she must promote. But, after all is said, aside from her professional training, tact is really the fundamental requirement.

### The Plan Explained

Our nurses are members of the safety department and do their work under the direction of the safety inspector. They are also responsible to the general superintendent or a manager of the group of mines in the district in which they work. Their responsibility to the physician concerns only the cases which he is caring for. That is probably better illustrated in this manner. The physician, who is caring for a family where there is illness, advises the department of the fact. The nurse visits them and tries to make the sufferer more comfortable and cheerful, explaining in detail any instructions which the physician may have given. Her responsibility to that physician ends when his case is disposed of. In this way, it is almost impossible for the physician to make use of her as an office assistant, or to send her out to apply dressings or do other work for which he is being compensated. The nurse, then, being responsible to the company, may feel free to make any suggestions as to the improvements in our medical service, without feeling that she has overstepped the bounds of professional etiquette. Our instructions to our nurses are simply this:

Here is where our people live. Go out and do your best to help them keep their bodies healthy and their minds free from worry. Sympathize with, and help them in their sorrow. Try and leave each home happier because you were there, and, finally, try to inculcate in them the spirit of love, not only within the family, but for their neighbors and for America. Remember, always, that in their eyes YOU are the company.

### Social Work Done by Nurse

These instructions to our nurse may not seem explicit, but it is utterly impossible to lay out a specific plan for her to follow. Of course she makes weekly and monthly reports of what she has accomplished, but the written and spoken words cannot begin to do her work justice. The real report can be attained only by going into these communities and noting the changes which have taken place since the advent of the nurse. We find an example in the case of an ordinary family. One of the children is sick. The nurse calls and helps make the little sufferer comfortable. Before leaving, she teaches the mother a few things relating to the care of the child. She calls at this home often during the period of illness, becoming acquainted with the other members of the family and with their immediate neighbors. She learns the birthdays of the children, calls them by their first names, inquires about their school work; in fact, she is interested in every affair of their daily lives. Soon she has established herself in the neighborhood. She remembers the birthdays of the children and comes to them on those days with some little gift. Soon the people begin to look forward with pleasure to her visits.

The mother of this family has not been in good health, and has dreaded to go to the hospital for an examination. Soon, however, the nurse will suggest this and will make an appointment at the hospital, accompanying the mother on her visit. Perhaps a few decayed teeth are the cause of the trouble. She will prevail upon her to have the necessary dental work done. After this work is accomplished, the mother, being again in good health, commences to take a new interest in life. Then comes a desire to improve her home. She will want new curtains and new furniture, and, naturally, the friend of the fam-

ily, the nurse, is called upon to assist in the selection of this material. She will then wish to associate with her neighbors. The first step in this is usually taken during the canning and preserving season. The folks are brought together in a home, where the nurse has arranged for a demonstration by a person skilled in that work. The friendships formed at this little gathering grow, and probably during the winter they begin to meet at little neighborhood parties, again sponsored by the nurse. After she can associate with Americans, and have the family dress like them, the mother learns to laugh and to live. Then, instead of the workman coming home to a harping, nagging wife, he finds that joy has supplanted gloom, and his home is, as it should be, a temple of happiness. In the home where happiness reigns, there you will find love, not only in the family, but also love of America, its institutions, and industries. When this attitude prevails among the workmen, and America's industries recognize the blessed trinity of laughter, love, and work, we will have made a real start toward the solution of one of the great problems confronting us.

### MASSACHUSETTS NURSES MEET

The annual meeting of the Massachusetts Association of Directors of Public Health Nursing Organizations held recently in Boston was made the occasion of a conference to map out plans for future work. The address of Miss Mary S. Gardner, superintendent of the Providence, R. I. Visiting Nurse Association, was especially suggestive in discussing the problems of the Central Governing Board and relations with collated activities. New officers of the Association were elected as follows: Miss Gertrude Peabody, president; Mrs. Henry L. Sherman, of Lawrence, vice-president; Mrs. James W. Russell, Jr., of Winchester, secretary and treasurer; executive committee, Mrs. Herman E. Roberts of Braintree and Mrs. Roger Spalding of Duxbury.

### BEDSIDE CARE FOR INCURABLES

That provision for the nursing care of chronic and incurable cases should be provided through the extension of the present visiting nursing service, is the opinion of Miss Mary Laird, head of the Rochester, N. Y., Public Health Nursing Association. The majority of these patients themselves would not want to leave their homes, she said, and their number in almost any community is such as to make prohibitive the cost of caring for them in specially provided institutions. Even a small part of the money required for the support of a hospital for incurables, applied to extending the visiting nursing service, would bring far greater benefits to the patients. From every point of view, a home nursing system seems to Miss Laird more desirable.

No estimate has been made of the number of cases of incurable disease in Rochester now being cared for in their homes.

### CANADIAN RED CROSS SOCIETY

The Committee on Journals appointed at the recent meeting of the Advisory and Consultative Committee of the Canadian Red Cross Society met recently in Toronto. The Committee decided to utilize the *Public Health Journal* of Canada as a medium through which news and information as to the activities of the various voluntary organizations in Canada may be given more adequate distribution. Scientific articles and news notes from these organizations will begin to appear regularly in the *Public Health Journal* in the near future.

# RECREATION AND THE PUBLIC HEALTH NURSE

BY EMELIE M. PERKINS, R.N., ARLINGTON, N. Y.

DOES the responsibility for the recreation of her community lie upon the shoulders of the public health nurse? Her shoulders are broad, but there is a limit to the weight which she can bear. She demonstrated her value as a bedside nurse some time ago; and then she was intrusted with the preventive care of school children; the discovery, care and education of tubercular and venereal disease patients; the education and care of expectant mothers; and the supervision of babies from birth to school age. The routine work of assisting medical inspectors with the examination of school children is followed during the school year by endeavors to have defects remedied, by health talks which may not be cut and dried, but must be alive, that is, carefully planned, and given with real enthusiasm and interest. The health talks and the discovery of existing needs lead to conferences with teachers, members of the school board, mothers, and active members of the community in regard to the installation of hygienic lavatory conditions, the organization of Parent-Teachers' Associations and Mothers' Clubs, the establishment of open-air schools, hot school lunches, ungraded classes, school playgrounds, and clinics of all kinds. An interest is manifested in home nursing, first aid courses, or Little Mothers' Leagues, and the nurse, glad to impart her knowledge of nursing, forms and teaches these classes. The winter comes and families which exist precariously through the summer slip back into destitution. The nurse must know whether the need is real, and often she must collect food or clothes and distribute them. She must know which families are too proud to ask for help. She must know how to advise an harassed housewife; she must be able to clean and scrub in an emergency. She must always have time to talk things over, or to draw out a reticent patient. She must keep records which will show what her work accomplishes, and often she must give her own work that publicity which she feels that it needs.

## This Much Is Required

Every township nurse knows all this; it is a matter of experience, and not of theory with her. She wonders how she can possibly put anything more into a day. And yet, every township nurse does mother her community, and it is hard to set a limit when something as necessary as proper recreation must be left outside. Just as a specialized public health nurse,—a tuberculous or a child welfare nurse,—is constantly seeing the need of generalized nursing service in her community, so the general community nurse sees the close association of health and recreation, and longs for a recreational director. Rural communities are proverbially conservative: they are not yet fully alive to the need for public health nursing service, and only a few of the larger centers have seen the need for a trained recreational director and have provided for that need.

That such a need exists, there can be no doubt. The general trend of enlightened thought and surely the experience of township nurses, shows that. Mr. Lindemann of the Country Life Association, an ardent and convincing apostle of the doctrine of rural recreation, and the Association itself, recognize the need. Colleges which train for community leadership recognize it, and also the general colleges which send out their graduates with a quickened sense of social responsibility and a slight training

in applied sociology. One of the large women's colleges recently engaged a leader in community singing for one week. He demonstrated, not the theory of community singing, but the actual leadership, to a host of enthusiastic young women. The directing of public playgrounds, games, story-telling, are now part of the college curriculum. Under the caption "Buzz and Gossip in Kentucky," the *Survey* publishes an article describing a play institute at Danville. The article notes in closing:

The general verdict, especially among those who had come a long way from remote mountain districts, was that the Play Institute was worth to them a whole week of speeches, and it was decided to repeat it next year in Lexington.

It is easy to prove to ourselves that we must have a recreational director in our county, or better, in our township, but not so easy to procure the necessary salary for the director and the equipment for the recreational work. Often it falls upon the nurse to decide whether she might better devote a part of her time to demonstrating that need, or whether she should devote it all strictly to nursing work. She has spent three years of intensive training in preparing for nursing. Should she undertake something for which she is not trained, and at the expense of nursing work? Of course, it depends on the personality of the nurse. To some it would be impossible to plan and carry out a program of recreation, and for them there is no problem. There is plenty of straight so-called "public health work." But as to the nurse's intensive training, is there not a question? Undoubtedly she has worked hard for three years, and should be admirably fitted for private nursing at the end of her course, but if she becomes a public health nurse, will she not encounter situations just as foreign to her experience as any she finds in recreational work? The scrubbing and "scut work" of her training are really helpful in district work; the technique, and understanding of symptoms and the course of disease, invaluable. But the short course in district nursing which is the best training yet available to many nurses during their hospital years, leaves them lamentably ignorant of the procedure of organizing clinics and classes, of cooperating with friendly social organizations, of helping the mentally defective and those suffering with venereal disease. Planning campfires, canning clubs, cooking, sewing, and dancing classes is no harder than planning clinics; and finding leaders for them is no harder than persuading over-anxious, reluctant parents to let Johnny part with his tonsils. If the public health nurse is fond of children and of a social disposition, as she is very apt to be, this part of the work will probably offer no more difficulty than the direct health work.

## The Pros and Cons

The question resolves itself finally into this: Should the public health nurse ever sacrifice a part of her time to the organization of recreational activities? Under certain circumstances, we would all flatly answer "No." If she does not feel a genuine interest in this phase of health work, and a conviction that it is worth while, she should not undertake it. If she is unwilling to work sometimes in the evening, she should not undertake recreational work. If she is not backed by a strong organization, or if she is in a new field, that is, one experimenting for the first time with a public health nurse of its



own, most assuredly she should not consider it. But is it not a proper activity for a nurse in a well established field, backed by good organization, or even by a few thoroughly interested individuals? No township nurse can possibly do all the nursing work in her own township. That is generally recognized, and a nurse is engaged as township nurse, but with emphasis on school nursing, or emphasis on bedside nursing, or emphasis on prenatal and maternity care. If she is school nurse primarily, she does the rest of the work as well as she can, but she does the school work first. She knows her school children well, and she learns to know their needs. It would be a very tired or blasé nurse who would not wish to help organize a playground, after hearing a dialogue to this effect between two young boys,—a conversation that may be heard daily in almost any small town: "Come on, Fred, let's go downtown to the movies." "Aw, what's the use?" "I dunno, but what else is there to do?" "Well, awright—"

Not that there is any harm in the movies, but there is harm in this frame of mind. A punching bag, a basket ball or volley ball outfit, a carpenter's bench, an active Boy Scout organization, are some of the answers. Venereal disease confronts every nurse. It is a difficult thing to discover and treat. Could not prevention be applied in the form of friendly social dances, even if the facilities for dancing were poor, and the quarters small? Camping trips, hikes, games, all outlets for exuberant animal spirits, are preventives. The relationship of the culinary art to health is obvious, and surely a cooking class which has learned how delicious potatoes may be when they are not fried, will be a practical link between the nurse's health talks and the home. The dancing and the sewing classes, the story hours and parties, are not so evidently related to health, but they are related to the normal development of the child.

### Small Beginning Possible

The nurse must start the recreational work in a small way. A playground in connection with the school, with volunteer leaders on Saturdays and after school hours, would be as valuable to the school as the soap, paper towels, and paper cups for which many a nurse has worked hard and long. With the proper backing and volunteer help, other things could be slowly evolved from this. But she must have help. If the community is apathetic and leaders absolutely cannot be found, she must not undertake it. She must have some sympathetic organization or group back of her for inspiration and practical help. She must have at least a few dependable volunteer leaders. She must make it clear to the people backing her that she is primarily a nurse, that she is trying to demonstrate the value of recreational facilities to the community, and that, as far as she is concerned, her present endeavor is merely a demonstration. That is, that the work must stand or fall on its own merits after a definite period of time, as one year. Of course, she is taking a chance in thus devoting a part of her time to work which may be given up. But the Red Cross takes the same chance when it places a public health nurse, and says to the community, "We will furnish this nurse for a certain length of time, after which you must keep her yourself if you want her." The Red Cross did pioneer work in opening up fields for public health nurses, and in placing them; the Young Women's Christian Association is making the development of recreational facilities one of the vital parts of its program. Let us hope that these two powerful organizations will stand back of the individual nurses and their communities in their efforts to

introduce organized recreation as well as health work into their communities.

### NURSING CONFERENCE IN MICHIGAN

The installation of the seventh bureau of the Michigan Department of Health, a Bureau of Child Hygiene and Public Health Nursing, with Miss Harriet Leck, formerly superintendent at Grace Hospital, Detroit, and superintendent of Visiting Nurses of New Haven, Conn., as its Director, marked the first assembly of public health and visiting nurses ever called in Michigan. More than one hundred nurses from nearly every county in the state were in attendance, meetings being held in the house of representatives of the capitol building.

The formation of the new bureau enables the Department of Health to cover every public health field in Michigan, there being bureaus of sanitary engineering, laboratories, communicable disease, venereal disease, education, embalming, and child hygiene and public health nursing. The new bureau will serve to unify Michigan's child hygiene and public health nursing programs, working as it will in cooperation with the Red Cross and the Anti-Tuberculosis Association. In fact, the conference of nurses was arranged by Dr. R. M. Olin, state health commissioner; Miss Elizabeth Parker, executive secretary of the Michigan Anti-Tuberculosis Association; and Miss I. Malinde Havey, Michigan Red Cross field worker.

Delegates to the convention were instructed in making of public health posters, viewed various demonstrations at the Lansing Health Center, such as the inspection of rural school children, were shown movies relating to public health and visiting nursing problems, and were conducted through the various divisions of the Michigan Department of Health, the heads of the bureaus explaining just what services county nurses could demand from the Department.

Dr. Olin presided at the opening session, telling the nurses of the Department's proposed plan to have a full time, qualified medical officer as health officer in each of the eighty-three counties of the state. Miss Marjorie Delevan, director of the Bureau of Education, spoke on "The Value of Education and Publicity"; Dr. C. C. Young, director of laboratories, told of "The Relation of State Laboratories to Public Health." After each talk there was allotted time for discussion and questions and answers.

During the afternoon of the first day Miss Elizabeth Parker told of the work of the anti-tuberculosis societies in the state and the general program of the Michigan Anti-Tuberculosis Association. Dr. William J. V. Deacon, director of the Bureau of Communicable Disease, spoke on how the nursing profession can cut down the incidence of communicable diseases. Miss Mabel Rogers, state director of Health Crusade, explained how Michigan school children are learning to play the game of correct living; and Dr. E. R. Vander Slice, of the United States Public Health Service, chose as his subject, "Cooperation of the Nurse with the United States Public Health Service." The evening session heard Mrs. Barbara H. Bartlett, director of public health nursing of the University of Michigan, enumerate, in what was considered one of the most inspirational lectures ever given on public health nursing, the qualities of the ideal public health nurse. Mrs. Dora Stockman, head lecturer of the State Grange, spoke on rural health.

Health centers was the topic discussed Thursday morning by Miss Marie Phelan, assistant director of the department of nursing of the Central Division of the Amer-

ican Red Cross. The Red Cross Nutritional Program was explained by Miss Nina Streeter, of the Central Division of the Red Cross, while in the afternoon Miss Harriet Leek made a report on the St. Louis Conference of the American Child Hygiene Association. Miss Mary C. Trafford, Kalamazoo county nurse, talked on county organization; Miss Elma Bergey, Kent county nurse, on dental clinics; and Miss Katherine Johnston, Infant Feeding Clinic of Grand Rapids, on nutritional work with children of pre-school age.

Before adjourning, the delegates unanimously passed the following resolutions:

- Whereas, we, the public health nurses of Michigan, in conference in Lansing, October 20-21, 1920, recognizing that in unity is strength, submit the following resolutions:
1. Resolved, That we offer our services to the United States Public Health Department through the State Director of Child Hygiene and Public Health Nursing, for the purpose of reaching disabled ex-service men and women.
  2. Resolved, That we recommend to the American Legion of the State of Michigan that in order to meet the present emergency in caring for tuberculous ex-service

men and women that immediate efforts be made to increase the already existing sanatoria.

3. Resolved, That we support the State Commissioner of Health in securing a law to establish a full time, qualified medical health officer for each county in Michigan, and be it further resolved that we support and cooperate with the present plans of the Bureau of Child Hygiene and Public Health Nursing of the State Department of Health.
4. Resolved, That this conference has been of great value to the public health nurses of Michigan, and we would therefore respectfully request that the State Department of Health arrange for frequent state and district meetings and we would suggest that the districts of the State Nurses' Association be used as the unit whenever possible.
5. Resolved, That while continuing to support and cooperate with the Public Health Section of the Michigan State Nurses' Association but, whereas, the public health nurses of the state realize the benefits to be derived from contact with those of the medical profession who are interested in public health and members of the Michigan State Public Health Association, we respectfully request that a Section on Public Health Nursing be created in the Michigan State Public Health Association.

## THE VISITING NURSE ASSOCIATION OF CHICAGO— ANNUAL REPORT

BY EDNA L. FOLEY, R.N., SUPERINTENDENT, CHICAGO, ILL.

LAST week I asked a friend who knows nothing about visiting nursing what she would be most interested in hearing discussed in an annual report. She said, briefly, "results"; therefore, thinking that all may be of the same mind, our annual report is going to tell something about the results of hundreds of thousands of visits paid to our more than thirty thousand patients during the past year.

### Messengers of Hope

This large number represents more than twenty thousand individual homes. To six thousand, or not quite 20 per cent, of our new patients, we went as old friends, for sometimes our records show that we had been in those homes before, or more often than not some member of the family supplied the missing information. After a rather bad struggle a visiting nurse was successful in helping a young girl back from a very serious attack of pneumonia. The father, a man over thirty, had not seemed unduly alarmed even when the condition of his young daughter was at the worst, because, as he afterwards explained: "I knew you could do it; from the first minute I laid eyes on you coming in that door, I knew it was all right with Mary. You see, more than twenty years ago, when I was only a kid and my mother was dying with the same thing, a girl like you, with a blue coat came in. Ma had no chance, they said, but if you want to hear her tell about it, she is only two blocks away down the street. I have never seen the blue coat from that day to this, but as soon as I saw it, I knew that Mary was safe."

Mary is lost now among the 18,956 patients dismissed "recovered," one of the "results" with which we are modestly content. An aggregate of 5,052 patients dismissed "improved" is not a bad showing. One of them, the young mother of three small children, limped gaily into our Christmas party as if she had never had a care in the world. Just four years ago this month we were asking you to give her a rocking chair, as the 1916 epidemic of

poliomyelitis had left her apparently hopelessly crippled. Home visits, consultations and orthopedic surgeons, treatments, braces, crutches, three years of hard work, and then, presto, she is dismissed "improved," not needing braces, discarding crutches, her four room flat a marvel of tidiness, and herself able to get downtown to do a little shopping off and on. Can one ask more of so simple a word as "improved"?

Our next classification of dismissed patients, "unimproved," is not so pleasing. In this discard, 4,262 are totaled, the saddest being the young mothers and their tiny babies whom we must discharge "unimproved to midwives," for we do not give care to any patients who do not employ physicians. Occasionally this rule seems a very hard one. There is an old man on the West Side who stubbornly refuses to call a doctor for his injured leg because "the nurse dressed it once and done it right smart and he won't stand for the foolishness of calling a doctor." Unfortunately for his peace of mind, the commonwealth has never given us the right to practise medicine; consequently, the home-made attentions that his poor leg is receiving are rapidly making a bad matter worse.

Of our patients, 862 have died in their homes. One poor soul's release came last Easter after months of dreadful suffering. A furious blizzard ushered in that day. Easter Monday the lonely husband said brokenly to the visiting nurse who went as usual to do the daily dressing: "Nobody else came. Her mother was snow-bound on the North Side and couldn't get here, and my sister was tied up in Indiana and she couldn't come. I telephoned other friends, but they couldn't come, either; they said there was nothing that they could do. Once I thought that the wind had blown in the door, it blew so hard, but I looked up and saw that it was the visiting nurse. There wasn't much she could do, either; there wasn't much anybody could do, but it was heavenly brave of her to come and it sort of eased the end a little."

In all, more than 30,000 patients were dismissed from our books, and of these less than 900 were not traced because of wrong addresses. An incorrect address is the bane of a visiting nurse, for it doesn't help her at all to travel to 6400 South when a little forethought on the part of the person sending in the call would have guided us to 6400 North.

#### Where Patients Come From

People frequently ask how we find our patients. We don't find very many of them, they come themselves. About one-third are referred to us by employers and the Metropolitan Life Insurance Company, whose industrial policyholders, when ill, are given care by our service. About one-fourth are referred by physicians; families themselves telephoned in more than four thousand; hospitals, dispensaries, and other agencies sent the remainder.

Visiting nursing is difficult work. One seldom knows when going to a new call whether the patient will present a medical, social, or economic problem. Sometimes all three confront a nurse, and consequently all three kinds



MISS EDNA L. FOLEY, CHICAGO.

of training really are needed to fit her for the decisions and work that await her in many homes. Conditions rarely seen in general hospitals are of frequent occurrence in district homes, and the nurse must have nimble wits and a good hospital experience if she is going to be able to handle six or eight different types of cases in one day, to say nothing of six or eight different types of families.

This is one reason why the work in the districts is carefully watched by a staff of supervisors whose number we should like to see increased. Last winter a supervisor paid an emergency visit in the house of a choirboy who was very ill with pneumonia. She had only to take his pulse to discover a very unusual symptom, a faint but slow pulse, not the usual rapid one that accompanies this high-fevered, hard-breathing condition. On questioning the mother she ascertained that medicine, ordered every two hours, was being given hourly as the boy grew worse; for the mother, although in many respects a most intelligent woman, had reasoned that if a little helped, a lot might do better. The medicine was stopped, the doctor summoned, a special nurse put in the home for forty-eight hours, as much to give the over-wrought mother a rest as to care for the boy, and the patient made an uneventful recovery. A nurse who could shake down a thermometer but had never been taught the significance of pulse rate and quality would have been of no special assistance in this particular home.

Nursing is variously defined by its friends and adversaries. Some people would have you think that any creature in petticoats can be a nurse; others that all nurses are angels of light and messengers of glad tidings. There is a devoted daughter on the South Side who knows that an untrained person can't develop into a full fledged nurse after a few lessons, for an over-zealous visiting nurse tried to assure her that any intelligent woman could give her old mother, lying in the semi-conscious condition that so often follows a stroke of apoplexy, the simple nursing care that the patient required. The care was only bathing and feeding, and one or two other simple treatments. Many mothers understand them and can give them quite well; but the nurse had failed to take into consideration the fact that the patient was very heavy, that the weather was very warm and that the bathing, sponging, and rubbing in addition to the other treatments required a skill born of long practice. As the daughter said afterwards, "She was a very good nurse except that she did not speak the truth. She said that I could give mother just as good care as she gave, and I couldn't; for I tried it and we were both miserable until the nurse came back the next day. Now everything is all right again." To some people a patient in that condition is just an uninteresting old woman, but to devoted children such patients are mothers and fathers, and the best nursing procurable is not too good for them, whether or not the patient is able to appreciate it.

#### Carried into New Year

We entered the new year with more than two thousand patients forwarded on our books, many of these being acute cases whom we trust will convalesce rapidly and be dismissed into our "discharged, recovered" class. There is one man in the group to whom the nurses have been going very faithfully—in fact, last week a visiting nurse was approached by a little old woman while she was waiting for a street car out on the edge of one of Chicago's big prairie districts, and, without any other preliminaries, the little lady said, "I don't know your name but I must speak to you. I always have to speak to girls in your uniform, for one of you has been coming to my house every day for the last three years and she makes it possible for us to keep our home together. Never, so long as I live, shall I forget what she has meant to us." An extensive, painful, and, to many, repulsive dressing done daily, although the patient be a long suffering little man, might not seem to some people constructive work; but when you consider that faithful service in this one home alone has enabled an elderly couple to keep their home together without further outside assistance, we believe that visiting nursing not only requires the highest type of skill but the warmest kind of a heart.

Our staff has grown very large and we are doing all sorts of work, but from the earliest years of its history the Chicago Association has been more or less famous for the nurses that have gone out from it to all parts of the earth. During the past year we have heard from our former visiting nurses in China, the Philippines, Serbia, Poland, and France; and there is hardly a state in the Union in which some one of us has not worked. Only recently we have heard from nurses in Texas, Kansas, Ohio, and Colorado. Just last week we got the following letter from a nurse who left us more than two years ago:

School work has kept me very busy this past month, as we have had a smallpox epidemic. During the height of the epidemic more than sixty families had it. In one family the father and six children were ill and, to make matters worse, the mother gave birth to a baby boy. I

urged vaccination last fall, but it took a little time before the school board passed on it. We kept the schools open; in fact, in a small town, where people think less of having smallpox than of being vaccinated, it was really the safest thing, but it was work to discover all of the cases. During the height of the epidemic the city council wanted me to investigate all suspected cases in the homes, and a machine was placed at my disposal. The mornings were spent in the schools and in the afternoons visits were made all over town and sometimes four miles out in the country. In one place, three miles out, a school child had every evidence of smallpox, but the mother had thought nothing about it and had called no physician. She told me she was going to town that afternoon to visit her sister, just operated upon at one of the hospitals. Needless to say, she did not go. Rich and poor were affected alike, and quarantine signs were seen all over town. There are many problems to meet, even in a small community, and to have no one to turn to for advice makes it difficult at times.

It is just such nurses as this, who are brave enough to do their duty in spite of its difficulties, that the National Organization for Public Health Nursing is trying to help by serving as a national information bureau, a library center, and clearing house.

### Factors in Family Comfort

We have found our people far more comfortable during the past year than ever before. Even in this period of depression, a surprising number are living on savings or on neighborhood credit and, although many men are out of work, they are asking jobs, not relief. Of course, higher wages and lessened immigration have much to do with this state of affairs, but we believe that prohibition has been no small factor. Not all of our homes are so comfortably fixed. In one the visiting nurse found no evidences of any comfort except a Victrola. Broken chairs, poor beds, and a lean cupboard were perfectly visible; but on the center table, proudly put forth in sight of everyone, was this wonderful Victrola on which, as she learned, the family was paying fifty cents in alternate weeks, though they were still paying two dollars a month on a Liberty Bond. As Liberty Bonds and Victrolas are seeming luxuries on an eighteen dollar a week wage, it is not surprising that the Victrola possessed only one record, but before the patient could be introduced and given care, the nurse had to sit on a rickety chair in a cold room while the family solemnly played that one record through for her. It is difficult for people who have many pleasures in their lives to realize how much the poor will frequently sacrifice for the sake of beauty that we accept unconsciously or as our right.

A year ago I was in Italy working with some Italian nurses, and I asked one of them, whose English was far better than my Italian, what she considered the most outstanding difference between Italian and American nurses and, to my amazement, she said very seriously, "You never give up, you hold on. If Gabriel himself came for the patient, you would shut the door and keep on working." And then she went on to tell me that she had been in the American Hospital in Rome where an American soldier boy was dying of typhoid fever. The physician and the priest had left, saying that they could do no more, and she had just settled herself comfortably in a chair by the bedside to await the end, when an American nurse came in, scolded her because the ice cap was not properly filled and apphed, adjusted the curtain to keep the sunlight from the bed, fixed the pillow so that the position of the boy's shoulders was changed ever so little. Every few minutes that nurse came in and did something, and finally the bewildered and indignant little Italian, in no uncertain tones, reminded her that the boy was dying and should be allowed to die in peace. To her amazement,

the nurse replied, "You don't know whether he is dying or not; unless you work over him you may help to kill him. In America a nurse never gives up."

Somewhere in Rome today a young Italian nurse is doing her best to save the lives of little babies in miserably poor homes—homes so much poorer than anything we have in Chicago that Chicagoans would hardly believe if one were described here—and all because an Italian nurse has just as much pride in her work as any American nurse, and if her sister overseas can never give a patient up, she can't, either.

In spite of its difficulties, the visiting nurses like their work, and their motto, too, is the motto of the American nurse in Rome; for so long as the family and the patient allow us to fight, we, too, never give up.

### PUBLIC HEALTH NURSE

The *Public Health Nurse* for February, 1921, contains a discussion by Lee K. Frankel on the decreasing mortality rate as resulting from the extension of nursing service to industrial policy holders. For an expenditure of a million and a half dollars for preventive work among industrial policy holders in the year 1919, he says, the Metropolitan Life Insurance Company effected a reduction of three and a half million dollars in claims and a saving of 18,000 lives that can be accounted for only by the health work done by the company. In more detail, the percentages of mortality reduction for certain diseases in the industrial class from 1911 to 1919 have been as follows: typhoid fever, 68; acute infectious diseases of childhood, 46.5; tuberculosis of the lungs, 30.2; organic diseases of the heart, 19.7; Bright's disease, including nephritis, 25; and puerperal septicemia, 23.9. In every case the company's reduction has been greater than the corresponding decrease in the entire registration area; and, especially since this reduction is most marked in those diseases which, like typhoid fever, diseases of childhood, tuberculosis of the lungs, and diseases of maternity, have been most subject to the company's nursing service, it is fair to say that the nursing service has been in a large measure responsible for the relatively greater saving of lives among policy holders than in the general population. The same issue contains articles of interest by Lois Stevens on "Mothers of Our Race," and on "A Definition of Nursing," by Miss Edna L. Foley.

### THE PREVENTION OF HEART DISEASE

The Association for the Prevention and Relief of Heart Disease held its third annual meeting at the New York Academy of Medicine, February 7, 1920. The activities and plans of the Association were discussed by Dr. Haven Emerson. The plans for the ensuing year, including the further development and application of measures which will prevent heart disease, will seek to provide occupations suitable for cardiac patients, and will promote the establishment of special dispensary classes for patients with heart disease. Significant figures were presented on the incidence of heart handicaps. Not less than 20,000 children in the public schools of New York City come under this category. At Bellevue Hospital alone last year there were treated 781 patients suffering from advanced stages of heart disease and 10,421 deaths were caused by organic heart conditions, in comparison with deaths from tuberculosis, which numbered 7,396, and from cancer, which numbered 5,141. The following members of the Board of Governors were elected: Dr. F. Stuart Hart, Dr. John W. Brauman, Dr. Robert D. Halsey, Dr. Charles Hendre Smith, and Dr. E. G. Stillman.

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# PROBLEMS IN SOCIAL MEDICINE

## Medical and Health Education, Child Welfare, Social Insurance, Rehabilitation, Medical Law and Allied Subjects

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JOHN A. LAPP, LL.D., *Editor*

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### HEALTH OF THE SCHOOL CHILD

THE responsibility of the school for the health of its pupils is being realized more fully than ever before, and is one of the favorable indications for a marked advancement in the physical status of our people. It is believed and expected that many of the ailments of later life, including the so-called degenerative diseases, will be materially reduced on account of the improved physical condition and better personal hygiene in youth. Society's supervision over the health of the child during the period it has set aside for the development of his intellect is due to the recognition of the close relation between the physical and mental condition of the child, also to a growing feeling that the child's health is just as much a social responsibility as his education.

The extended employment of medical inspectors, school nurses, and physical training teachers, and instruction of both the teacher and child in the fundamentals of healthy living, have been productive of markedly beneficial results. Reduction in the absenteeism from school, lowering of morbidity from communicable diseases, and improvement in the child hygiene are some of the definite advantages ascribed to the school health campaign. With the further development of these activities, careful studies relating to physical defects or particular phases of the school health problem have been carried on and have contributed materially toward increasing the efficiency of this movement.

A recent report of the United States Bureau of Education based on the result of examination of eyesight of school children in all parts of the country can well be considered an urgent plea for immediate attention to the problem of conservation of child vision. Approximately 20 per cent of all school children are in need of eye-corrective treatment, but the solution of the problem rests not only with the detection and correction of these defects, but more especially with the removal of the causative factors responsible for these conditions.

The report includes a careful study of the environmental conditions unfavorable to eyesight, including classroom lighting—natural and artificial—color of walls, location of windows, position and condition of blackboards, size and comfort of desks and seats, size of type in printed books, and effect of moving pictures. The educator's view of the problem is expressed by Dr. Claxton,

who states that<sup>1</sup> "the fact has been demonstrated that there is a progressive increase of eye defects with grade progress in the schools. It is clear, therefore, that the care and protection of the eyesight of school children is a school duty and a school problem. It is incumbent upon the schools not only to discover defects and disabilities that impede growth and interfere with school progress, but also to make the conditions of school life and school practice such as will conserve and promote the physical and mental fitness of the children."

Investigations by the United States Public Health Service and others testify to the wide prevalence of dental defects among school children, frequently more extensive than all other defects combined. Of twenty-five hundred rural school children examined, 49.3 per cent had two or more decayed teeth, the highest percentage being found among eight year old boys and seven year old girls.

Dental defects may seriously injure the growth and development of the body and lower the child's resistance to communicable disease. In a plan for organizing protective and remedial measures for conserving the teeth of children, Clark and Butler<sup>2</sup> of the United States Public Health Service recommend the establishment of dental clinics, centralized and itinerant, for preventive and corrective dental work, and also education of the teacher, child and parents in the fundamentals of mouth hygiene. These measures are being carried out with effective results in many parts of the country. JULES SCHEVITZ.

### INCOME FACTS IN STUDYING DISEASE

The occurrence of most diseases is more or less dependent upon certain sets of conditions that are governed by the family income, says Edgar Sydenstricker in a recent issue of the *Public Health Reports*. The partnership of poverty and ill health has become proverbial.

The various methods of classifying families according to income are discussed and the derivation of the "Fam-main" scale explained. Other scales were developed to take into account differences in size of groups and sex and age composition, in the effort to bring the varying groups into comparable classification. The scales, as worked out in this valuable paper, seem to be applicable to all wage earning groups and the use of these scales would be decidedly preferable to former methods of classifying families on the basis of net income for the family as a whole. The usual methods of classifying families by income groups, by per capita income, or by families of similar size have a much more limited application.

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1. Eyesight of School Children, Bulletin No. 65, United States Bureau of Education.

2. Children's Teeth, A Community Responsibility. Public Health Reports, xxxv, No. 47, p. 2763.

# OBSERVATIONS ON THE INFANT MORTALITY RATE AS AN INDEX

BY DWIGHT M. LEWIS, M.D., DIRECTOR, RURAL SANITATION, WEST VIRGINIA STATE DEPARTMENT OF HEALTH,  
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SUBMITTING that the infant mortality rate is the most delicate sanitary index of a community, I am prepared to show that it is an index of the amount of preventable communicable diseases, both filth borne and respiratory in origin; it is an index of the amount of preventable defects of pre-school and school age; its delicacy may be resolved into one of localization of preventable diseases and such defects as constitute factors for the further spread of such preventable diseases. In reverse, the absence of such defects or the absence of the preventable diseases determines a possible absence of infant mortality both in urban and rural communities.

Sanitarians of today, like those of the past, agree that infant diarrhea is a factor in the reduction of infant mortality. The sanitarians of today know this from the application of the prevention of infection. Whether it is in terms of pasteurized milk, as advocated by New York City, or in terms of prevention of flies and fingers carrying infection from the diapers of those ill with diarrhea, as in Richmond, Va., or in terms of clean milk, as advocated and practiced by us in New Haven, Conn. (and, it should be remembered, the latter included measures against tuberculosis), all three such practices had the definite basis of "application" of scientific methods against the spread of disease. The reasoning of the sanitarians of the past was that agreement of "logic."

## As Relates to Respiratory Diseases

Absence of further commensurate reduction of infant mortality may be shown today to be definitely proportionate to the absence of continued reduction of the incidence of, and the mortality from, the respiratory diseases. That such absence of reduction lies exactly in "logical" reasoning rather than in the application of scientific observations has been shown by the author<sup>1-2</sup> during five years of municipal field experience in the control of the communicable diseases. The study of vital statistics of all respiratory infections not only in terms of reported cases and deaths but of investigation of unreported cases as well, together with consideration of the errors of diagnosis, gave two very definite conclusions: (1) That there could be shown a hitherto unknown interrelation and interdigitation of the various respiratory diseases; (2) that in no less certain terms than that of diarrheal diseases, respiratory diseases are a factor in infant mortality. The application of field observations in respiratory diseases to the reduction of the infant mortality rate gave definite results as compared to the previous years in our city where no such measures were taken. Comparisons made with both such time periods of the vital statistics of neighboring cities were confirmatory. The cities compared had similar birth rates and similar constituent foreign born populations.

At that time consideration was given to the possibility that congenital debility and malformations were susceptible of analysis from the standpoint of communicable respiratory diseases. Later I showed by a graph of the

vital statistics of the weekly mortality figures as published by New York City for a period of two years, agreement in the curve rates for infant diarrhea, respiratory communicable diseases and that for congenital debility and malformation.<sup>3</sup> In no less certain terms than this graph do we again have such confirmation at the present date. The weekly *Bulletin* of New York City shows a low record for 1919 of infant mortality. For 1920 the rate was higher and the one concurrent rise in any other group of diseases that was proportionate, and of the same time period, was the increased mortality from measles under ages 5 and 1. At and following this time period there was also an increase in mortality from congenital debility and malformation. There was, then, evidence that the residuum of congenital debility and malformation is during those periods of least infant diarrhea and communicable respiratory disease: that engrafted on that residuum may be found proportionate waves with increased both types of disease: that such maximum waves of congenital debility and malformations are during epidemic periods of both types of disease—infant diarrhea and communicable respiratory disease.

If now we read into the present day pre- and post-natal care, not the logic of personal habits and hygiene, but the applied science of prevention of communicable respiratory disease as well as that of infant diarrhea, what further facts or observations are on record for confirmation.

Brend,<sup>4</sup> from the study of the voluminous statistics of all England, concludes that the ruralization of all individuals is the solution of reduction of infant mortality beyond that gained by the control of infant diarrhea. This author places himself on record that the present day method of combat by the detailed pre- and post-natal care has been of very little avail, as evidenced by the record of the city of Bradford, where all such measures had been in effect since 1910. He states that the measures that will benefit all children and all classes are those which reduce mortality in the first year of life. The conclusion of ruralization is reached by "logic," in the same terms of unpolluted atmosphere as is needed for the young plant life. In accord with the author named, our published results of the reduction of infant mortality are pre-eminently the measures for the reduction of mortality benefiting all children and all classes.

We can now place on record our observations from the experience of one year's intensive work in rural county health work, which work confirms our municipal experience. Like the latter, our rural work has been the personal field experience based on house to house survey work in terms of all communicable disease and deaths, of births, and deaths under age 1, and of the examination of school and pre-school age children for the major defects. In a recently published article<sup>5</sup> I gave the observations based on a first survey of a rural county, predominantly agricultural in population, covering a three months period. The results as found and published were

1. Lewis, D. M.: Prevention in Public Health, Bost. M. and S. J., April 15, 1918.

2. Lewis, D. M.: Infant Mortality: Theory and Results, Bost. M. and S. J., October 17, 1918.

3. Lewis, D. M.: Reduction of Infant Mortality, MODERN MEDICINE, March, 1920.

4. Brend: Health and the State, Constable & Co., London, 1917.



as follows: The sum of all the agricultural areas had for the year 1919 a birth rate of 24 per 1,000 population and an infant mortality rate of 19. The sum of the industrial areas has for the same year a birth rate of 32 and an infant mortality rate of 80. One agricultural district had had an absence of infant mortality for each and every year of the five year period that the survey covered. Yet in the district mentioned the births showed an average yearly rate of 12 for the five year period. Offered in contrast was the highest rate of one industrial district with an infant mortality rate of 400. The relation of the mortality rate from communicable respiratory diseases and the infant mortality rate was shown in a published table. It was as follows:

TABLE I.- COUNTY SURVEY (Corrected).

District	W1	B1	M	B2	W2
Population	533	669	1114	1295	1664
Mortality rate respiratory diseases	0.0	8.96	2.8	14.9	4.2
Infant Mortality rate	0.0	68.00	17.0	82.0	56.0

There was further given a table showing how low was the communicable respiratory incidence and deaths from each and all the usual diseases during the five year period.

Brend<sup>1</sup> reasons with a qualification that measles and whooping cough should show as great an incidence in rural life as in urban. His reasoning is that where there is a school house, there those diseases are spread. His qualification is that we do not know the actual number of cases of the diseases mentioned in rural districts. From this standpoint as well as from the notably low incidence of communicable respiratory diseases that obtained in the county surveyed, a study was made of the incidence of measles in the rural areas. In that rural district mentioned as having had no infant mortality for the five year period, 66 per cent of the 263 children examined never had the disease; further, 51 per cent of the children who had escaped the measles were over ten years of age. In another remote area, equally lacking in railroad facilities and even road facilities save in summer, 71 per cent had never had the disease and 72 per cent of such children were over age ten. Further, the "flu" of 1918, 1919, and the February wave of 1920 had been a stranger to the two areas mentioned. Inasmuch as Brend shows that the death rates from measles and whooping cough are much higher in industrial areas than in rural areas, other observations that we have made are of importance in their bearing on the subject. A study of measles and pneumonia in army cantonments gave the same evidence that I had found in municipal life. In an article published in this journal<sup>2</sup> the death rate from measles is shown to be dependent on the concurring frequency of broncho-pneumonia. The simultaneous rise and their proportionate rates, predominantly in rural camps or camps made up of rural drafts, was evident on the huge scale of thousands of young adults. Our municipal experience was in terms of children with a lesser content of rurals. There is now corroboration from our rural experience. An excellent illustration of the relationship of measles and broncho-pneumonia was related in the recently published article mentioned.<sup>6</sup> We can bring further evidence to bear from our results of the examination of children. Our urban results in the reduction of the sum of respiratory as well as of specific respiratory diseases, predominantly diphtheria and streptococcal infections, were due to the finding of and control of the car-

riers of respiratory germ diseases, predominantly diphtheria bacilli and streptococci, and, to a lesser extent, pneumococci and the meningococci. As contrasted with a 2 per cent content of diphtheria carriers among children in a population of 165,000, following a frequency of respiratory diseases and an unusual frequency of reported and found cases of diphtheria,<sup>7</sup> we found no diphtheria carriers in the similar period of winter in 1920, during and subsequent to the "flu" wave in the examination of 1,763 rural children. There were found, as has been published,<sup>8</sup> three respiratory carriers; one was apparently pneumococcal and the other two were streptococcal.

### Problem One of Disease Carriers

There may, then, be in rural areas a low incidence of communicable respiratory diseases and there may be found a low carriage incidence of humans of the specific disease, as well as of that disease which is the chief factor in complicating the primary disease. Parallel to such low incidence of communicable respiratory disease and its continuance as low, is the continued low or absence of infant mortality. Is there not, then, evidence that we may with both "logic" and with "applied science" better express the atmospheric pollution of Brend as the demonstrated atmospheric pollution of respiratory communicable diseases? Such scientific application holds in the absence of such human carriage in rurals as holds in the rise and fall of the diseases in cities. How such carriers are made and continued was shown in an article dealing with municipal health work.<sup>8</sup>

In further corroboration of the intimate relation of communicable respiratory diseases and infant mortality, we now present the evidence from a second county survey among a predominantly industrial population, rural in

TABLE II.- INCIDENCE OF DISEASE. THE FIRST FIGURE IN DOUBLE COLUMNS INDICATES THE NUMBER OF CASES THE SECOND GIVES THE NUMBER OF DEATHS. TOTAL BIRTHS AND TOTAL DEATHS ARE SHOWN IN LAST DOUBLE COLUMN.

Suberlot	Population	Year	Diphthoid	Infant Mortuina	Tuberulosis	Lithneria	Leasie	Scarlet Fever	Leishmania (Leishman)	Polioyelitis	Whooping Cough	Total Problems	Mitine
W	1709	1918 1919	12-0 9-0	6-0 11-2	2-1 3-0	2-0 1-0	59-0 27-1	1-0 2-0	0-0 0-0	0-0 0-0	18-1 17-1	17-1 20-0	88-4 92-5
R-F.B.	909	1-18 1-19	7-0 7-0	3-2 3-0	0-0 2-1	4-0 1-1	31-0 5-0	3-0 0-0	0-0 0-0	1-1 0-0	12-0 20-0	12-2 13-7	51-12 51-6
D-3	624	1-18 1-19	4-0 0-0	0-0 2-0	0-0 0-0	0-0 0-0	19-0 17-0	1-0 0-0	0-0 0-0	1-0 0-0	15-0 11-0	4-0 4-1	31-1 37-5
A-Y	516	1918 1919	4-0 1-0	0-0 0-0	0-0 0-0	1-0 0-0	20-0 17-0	0-0 0-0	0-0 0-0	0-0 0-0	14-0 7-0	10-2 5-1	22-2 29-1
St	410	1-18 1919	1-0 2-0	0-0 0-0	0-0 1-0	0-0 0-0	11-0 0-0	0-0 0-0	2-0 0-0	0-0 0-0	3-0 0-0	4-2 1-0	21-2 17-0
B-A	590	1918 1919	13-1 0-1	2-0 4-2	1-1 0-2	1-0 1-1	19-0 0-0	1-0 1-0	1-1 1-1	1-1 0-0	13-0 13-0	21-5 11-4	36-4 27-1
Y-W	611	1918 1919	7-0 4-0	1-0 1-0	1-1 3-1	0-0 1-0	16-0 46-0	0-0 0-0	0-0 1-1	0-0 0-0	15-0 17-1	7-1 10-2	54-3 33-2
Sh	119	1918 1919	3-0 1-0	1-1 1-1	0-0 0-0	0-0 0-0	0-0 0-0	0-0 3-0	0-0 0-0	0-0 0-0	4-0 0-0	1-0 1-0	5-0 4-1
E	669	1918 1919	1-0 1-0	0-0 0-0	0-0 1-0	1-0 1-0	21-0 10-0	0-0 0-0	0-0 0-0	1-1 0-0	22-0 32-0	5-3 0-2	30-2 27-0
O	345	1918 1-19	4-2 12-1	2-2 2-2	0-0 0-0	1-0 0-0	11-0 6-0	0-0 0-0	0-0 0-0	0-0 0-0	5-0 5-0	14-3 9-1	16-1 17-1
L	502	1918 1919	3-0 3-0	4-3 2-0	0-0 2-0	1-0 1-0	17-0 7-1	0-0 0-0	1-1 0-0	0-0 0-0	22-0 11-0	14-1 7-1	22-3 25-3
-F	31*	1918 1919	1-0 3-0	0-0 0-0	0-0 0-0	1-1 0-0	3-0 3-0	0-0 0-0	1-1 1-1	0-0 0-0	16-0 19-0	5-1 7-1	18-1 11-0
MO	316	1918 1919	0-0 1-0	0-0 0-0	0-0 0-0	0-0 0-0	2-0 0-0	0-0 0-0	0-0 0-0	0-0 0-0	6-0 3-0	3-0 2-0	16-0 19-3
C	361	1918 1919	8-1 1-0	0-0 0-0	0-0 0-0	0-0 0-0	14-0 5-0	0-0 0-0	0-0 0-0	0-0 0-0	14-0 3-0	4-1 1-0	13-2 22-2
S	428	1918 1919	3-0 1-0	0-0 0-0	0-0 1-0	0-0 0-0	16-0 0-0	0-0 0-0	1-1 0-0	0-0 0-0	8-0 2-0	11-3 0-0	13-2 17-0
B	307	1918 1919	2-0 0-0	0-0 1-1	0-0 0-0	0-0 0-0	13-0 3-0	0-0 0-0	1-1 0-0	0-0 0-0	2-0 7-0	6-4 3-0	21-2 15-1
41	434	1-18 1-19	4-0 4-0	0-0 1-1	0-0 0-0	0-0 0-0	17-1 2-0	0-0 1-1	0-0 0-0	0-0 0-0	2-0 7-0	6-0 1-0	8-0 2-0

7. Lewis, D. M.: Study of Diphtheria Carriers, Bost. M. and S. J., May 1, 1917.

8. Lewis, D. M.: Application of the Factors Controlling Carriers of Communicable Disease, Interstate M. J., 1918, xxv, No. 1.

5. Lewis, D. M.: Status of Influenza, MODERN MEDICINE, February.  
6. Lewis, D. M.: Reduction of Mortality at Various Age Groups, Medical Council, December 1920.

the sense of population only. Due to a content of 13 per cent foreign born population and upwards of the same percentage of negroes, and the fact of continual shifting of parts of the population, the statistics from this county have a content of venereal disease which should be considered if absolute relations in terms of our discussion are sought. As our article is in terms of a predominant problem, the facts are mentioned only for the sake of interpretation of minor lack of agreement of statistics. Table II gives the incidence of and the deaths from the respiratory and filth borne diseases for the last two years of the five year period taken together with the births and deaths under age one for the various communities surveyed.

Examination of Table III shows the contrasting mortality rates for respiratory communicable disease and infant mortality rates for the various communities obtained from Table II. It is to be noted that in 70 per cent of the communities or areas that there is a comparison of rates, more or less proportionate, though generally less proportionate than in Table I. Exact proportions may not be expected, for the reasons given as well as from the fact that the birth rate of the surveyed communities or areas was 48 for each of the two years as compared to the industrial areas of the other county of 32 or that of the agricultural areas of 24.

Tables II and III, like Table I, show that even in industrial districts congenital disability and malformation as a factor in infant mortality may be a negligible one in the face of a predominant factor definitely infectious, and in parallel with the incidence of, and the mortality from communicable respiratory diseases. Based on death certificates of cities and the country, we are told that 40 per cent of deaths under age one are from congenital debility and malformations. Brend's statistics of total mortality for all ages per 1,000 children born are enlightening. Brend's rural south areas have a rate of 65.53 per 1,000 born, as contrasted with the industrial north of 129.77 per 1,000 born. Inasmuch as the north areas mentioned are those characterized by "smoke hanging over, cutting off 20 per cent of sunshine and 40 per cent of the total light," and atmospheric pollution is thereby reasoned, the analysis of the total rates given is of value. There is a 438 per cent excess of total respiratory and diarrheal diseases and a 37 per cent excess for prematurity and congenital debility and malformations of the north areas over the south. In a former article mentioned we gave the total mortality of all ages per 1,000 born in the agricultural areas as 66 and the industrial areas as 112. We also analyzed the deaths from the 61 per cent of obtainable causation of death in the industrial areas. The figures were 72 per cent from infectious diseases, 14 per cent from accidents, 10 per cent from prematurity, and 4 per cent from constitutional diseases. Table III shows that the excesses of infant mortality are localized in the same industrial area and that they are mainly those of communicable respiratory disease. An analysis of Brend's industrial area does not bear out Brend's logic. It does bear out the concurrence of his results in terms of communicable respiratory disease. There is further accord with Brend's statement that "the chances of survival differ but little at birth in town or country, but the noxious influences of the former soon come into play, making themselves felt as the first year of life progresses, to yet greater extent in the second and third year, when the urban excess approaches 100 per cent, and thereafter gradually declines."

We have, then, very definite evidence that congenital debility and malformations has been and is the waste

basket for missed and uninvestigated endemic communicable diseases, predominantly respiratory.

### School and Pre-School Age Defects

Only on completion of the statistics of the survey of the second county were we impressed with the possible relation existing between these two fundamentals of health work. Table III shows the very definite relation between the infant mortality of communities on the one hand and the percentage of nose and throat defects of the children of that community on the other hand.

TABLE III.—PROPORTIONATE RELATIONS OF THE DEATH RATES FROM COMMUNICABLE DISEASES AND THE INFANT MORTALITY RATE.

Community	Infant Mortality Rate for year					School age defects		Mortality rate 1918, communicable diseases	same 1919	total school children examined	total pre-school
	1915	1916	1917	1918	1919	School	Pre-school				
E-W	66	155	55	50	59	40	39	4.1	5.6	287	440
R-F.B.	24	100	113	235	118	56	49	6.0	9.6	103	220
D-U	95	200	174	32	135	50	36	3.0	1.6	68	132
A-L	125	100	45	87	69	42	35	3.0	7.7	101	134
St	0	63	0	95	0	42	31	5.5	0.0	60	88
D-H	87	250	174	138	143	53	39	15.0	18.6	55	111
V-M	50	189	128	56	60	41	36	2.4	6.1	104	183
Sh	250	333	200	0	250	46	32	8.4	8.4	24	28
H	74	60	42	67	0	40	36	5.9	3.9	108	116
C	125	100	154	166	59	46	44	20.0	11.6	33	54
T-F	100	175	118	136	120	31	51	9.9	9.9	48	101
T-F	0	71	0	77	0	31	47	9.4	6.3	55	55
MO	0	91	267	0	158	32	50	0.0	0.0	28	66
C	0	77	0	154	46	38	58	5.7	0.0	34	64
S	0	83	111	154	0	33	33	9.3	0.0	43	49
B	154	267	200	95	67	50	41	16.3	3.2	50	61
M	0	47	143	45	0	37	44	2.3	4.6	63	86

The existence of any constant between the infant mortality rate and the percentage of nose and throat defects should not be expected of the table, as the examination of the children was upwards of one-half year following the record of infant mortality. This alone explains the discrepancy in the figures of community T. F., where the recorded defects were subacute ones subsequent to and consequent on a frequency of septic sore throat that had been prevailing for some three months. Of interest is community R. F. B., which was an exception to the agreement of yearly infant mortality and respiratory mortality rates. The defect percentage in this community shows agreement with the yearly infant mortality rate, and from the morbidity of communicable diseases in Table II shows that the mortality rate may not be the true rate, by reason of errors of diagnosis. Inability to reach but upwards of one-half of the children in community S. is a reasonable accounting for the community being an exception to agreement of the infant mortality rate and defects percentage.

### Preventable Diseases and Defects

Summary of the intensive work on the three fundamentals of communicable diseases, infant mortality, and defects of children in industrial communities as shown in Table III is a rather clear cut picture that needs little comment. Our present day knowledge is that defects of the naso-pharynx are an index of resistance to communicable respiratory diseases. Should we further read into the table the known fact that our communicable respiratory disease carriers are those with naso-pharyngeal defects, and by field demonstration add such work for successful combat of the respiratory diseases, the interdigitation of infant mortality, communicable diseases respiratory in origin, and the naso-pharyngeal defects of human beings becomes rationalized through this ability to localize areas for resultful work and the measures that may gain the results.

Not only in rural areas where communicable diseases have been low in incidence, or even absent, but in industrial areas as well, under similar conditions, we can show parallel absence of infant mortality. The importance of this is great, inasmuch as it is exactly in such districts that "logic" reasons educational work as the greatest need in welfare work for the purpose of reducing infant mortality. Only after analysis, then, of the existing conditions of the industrial district may there be the intensive, resultful, continued increase of "community health." The failure of continued decreased infant mortality is rather exactly in terms of Brend's statement regarding the city of Bradford and applicable in many cities. Localization of absence of infant mortality may be shown in communities where no public health work has been done; what has been done, or better, what has happened, is the parallel of such absence of infant mortality and the absence of mortality from the communicable filth borne

and respiratory diseases together with that of the low content of defects of nose-throat in children of school and pre-school age.

In sum, infant mortality rates may be used as an index to check up and be checked up by the other fundamental units of health work. By vital statistics, by morbidity of communicable diseases, and by examination of the naso-pharyngeal defects of children, we may analyze the delicacy of the response in the infant mortality rate. If into the present day teachings of the physiology and pathology of the habits of life we translate these facts of the medical and surgical physiology and pathology of the naso-pharynxes of humans with respiratory disease and with defects, there will result better directed and more fruitful efforts toward the prevention of disease. We can through such work show the why, when and where of the delicacy of the most sanitary index of a community,—the infant mortality rate.

## EXAMINATION OF FOOD HANDLERS FROM STAND-POINT OF TUBERCULOSIS\*

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**O**CCUPATIONAL disease and hygiene have long been recognized as an essential health problem. In the food handlers, not only the personal factor of the employee, but also the contamination of articles of diet, and the spreading of communicable diseases must be considered. Compulsory physical examination of all individuals in contact with food prepared for or sold to the public has been instituted in many cities with startling and beneficial results.

### Profit by Prevention

The efforts and expenditures in instituting such a system are vastly repaid by the results obtained. The city profits by limiting the spread of communicable disease and by detecting early and advanced cases of tuberculosis, many of which would have been discovered through no other source. The employee or food handler gains by an early diagnosis or knowledge of a condition present and, consequently, can resort to early treatment provided to restore him to health. The public at large benefits by the knowledge that food is being handled by individuals unable to disseminate any disease by contact.

The routine employed consists in first notifying all employees and owners of establishments handling articles of diet, to appear for physical examination on a specified day at the Department of Health, where all facilities for a proper examination are at hand. The knowledge that they will not be permitted to work at this occupation unless they possess a certificate of health acts as a stimulus to have them appear promptly. Groups are examined twice weekly. These examinations are conducted by five physicians and four nurses. Upon entering, a careful personal record of past, present, and family history of the employee is taken. He is then admitted to the second room, where clinical observations are made. Here a Widal test for typhoid is taken and cultures from nose and throat are made for diphtheria.

He is then told to remove his clothing to the waist and thus prepares for his physical test. Admitted to the clinic room, a general inspection by two physicians takes place.

The nose and throat are observed for mucous patches or other signs of contagious disease. The skin is then inspected carefully for any rash. Should a vaccination scar be absent, he is promptly vaccinated. Any suspicious sore being present, a Wassermann test is made. The genitals in males are next carefully examined for signs of gonorrhea or syphilis.

Following the general routine inspection, he is admitted to the chest clinic, where the lungs are tested by means of inspection, palpation, percussion, and auscultation. If there is discovered any suspicious pulmonary lesion, whether acute, sub-acute, or chronic, he is given a sputum box and told to return it next day.

Should the sputum be found negative for tuberculosis, he must at once discontinue work. If his condition requires immediate treatment, proper arrangements for his admission to a sanatorium are at once made. If, however, he is able to perform some sort of work, he is referred to the Federal Employment Bureau, where he may obtain occupation other than that of food handling.

Should the sputum be found negative for tuberculosis, he is notified to appear for re-examination at a future date, which is usually set for a week or so later. Then the case is carefully studied by the director of the Tuberculosis Bureau and his assistants to determine whether it is one of tuberculosis or not. It is a common occurrence that many suspicious signs found on examination of the chest have disappeared in the interval between the first and second examinations.

All clinical facilities such as temperature, pulse, and x-ray are utilized in aiding the diagnosis. Some cases are observed for weeks before a definite conclusion is determined.

In considering the applicants for examination, many who have appeared and later been rejected, never thought for an instant that there was anything wrong with them. Others, knowing that they had a tuberculous lesion, never presented themselves for examination; foreseeing positive rejection, they preferred to leave their positions rather than be discharged for tuberculosis. Another factor noticed was that, fearing rejection, many applicants de-

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mied symptoms, thus depriving the examiner of an honest history which would be of valuable aid.

### Salient Points in Diagnosis

These symptoms would be most appreciated in cases of incipient tuberculosis, where the chest conditions are often hard to determine. In view of the fact that about 95 per cent of autopsies made show traces of a previous incidence of tuberculosis which may never have given any symptom during life, the difficulty is apparent when signs are slight or absent and when symptoms are denied. Again, many persons told to use sputum boxes or return for examination refused to do so and gave up their positions, assuming that the condition had been determined. These factors mask our statistics to a certain degree, so that it is impossible to obtain definite figures, and the number of positive cases of tuberculosis tabulated is limited to cases actually examined.

The following records show the results of our examinations:

#### From August 10 to December 1, 1920

Number examined by the Department.....	2,215
By outside physicians.....	407
Total examined .....	2,622
Total number examined.....	1,699
Total number suspected of tuberculosis.....	412
Suspected by outside physicians.....	4
Number of suspected tuberculous re-examined...	282
Number of suspected proved to be negative.....	198
Found to be positive tuberculosis.....	20
Found by outside physicians.....	2
Still to be re-examined by the Department.....	130
Actual cases of tuberculosis of food handlers.....	26

These twenty-six cases of tuberculosis are active and are not allowed to work as food handlers. These cases of latent tuberculosis are not considered in this paper.

### Examination Should Be Compulsory

In conclusion I would say that social economy is improved by compulsory examination of food handlers. If for no other reason than the prophylactic one, i. e., of knowing that those who handle dietary products are not tuberculous, these examinations should be advocated. The Department of Health, the employer, employee, and restaurant patron are all benefited. The health of the community is without a doubt greatly safeguarded by the isolation of infected cases. Especially those in daily contact with food are aided, at the same time the public is educated to the necessity of health laws. Of equal value is the knowledge to the public that they are protected and that the food ingested has been handled without danger of contamination. Such health reforms will bring humanity to a higher standard of living and may eventually if not entirely at least limit the spread of such a dreadful disease as tuberculosis, which has spread its claws through the entire universe for many centuries.

### FOOD ECONOMICS

IT IS not enough to produce food. We must also see to its storage and preservation, unless we are content ourselves to go short at some period of the seasonal cycle and to allow others to starve all the time. The Food Investigation Board has long been dealing with the problem of perishable food and its preservation, and a brief outline of its work for the year 1919-1920 is given in the Report just issued of the Department for Scientific and Industrial Research. Economical storage and transit can be determined only by knowing the physics and chemistry of foodstuffs inside and out, and every step should be taken to speed up the study of biochemistry and bio-

physics to produce results available in practice and to enable us to balance the lean years against the fat years. The projected new laboratory at Cambridge should help in this direction. Fortunately, the engineering problems of cold storage and of carrying fresh meats and fruit are being solved, and the bacteriologists are getting to know which moulds and yeasts must be carefully locked up in the Pandora box, and which are harmless enough to be let roam about. The question of transport affects the fishing industry in a peculiar degree, for the miraculous draught avails little unless it can be transported to its consumers, and small progress towards economical national housekeeping can be made so long as the glut of fish is liable to be returned to the sea which gave it or placed to rot on the land. From the land, food has to be wrested by the sweat of man's brow, and he cannot afford to forego the free offerings of the sea. The Engineering Committee of the Food Board is now busied with the construction of refrigerator wagons suited for use in this country; while the Board's Fish Preservation Committee has completed its report on the freezing of fish in time of plenty, based upon experiments carried out both at Billingsgate Market and University College, London. Progress is also recorded in the means of preserving meat, milk, and fruit, and in avoiding the moulds and spots which tend to spoil animal food while in the refrigerating chambers. Beef, it appears, may soon be preserved by freezing without altering the muscle substance; heretofore the frozen fibers in thawing lost a large part of their nutritive material in the form of hemoglobin-stained fluid. Experiments on the storage of fruit, recorded in the Report, are of peculiar interest. By the employment of certain artificial atmospheres in the storage chambers the life of the fruit may be greatly extended. The respiratory metabolism of fruit at low temperatures has been studied, and search made for the oxidizing enzymes responsible for the discoloration of certain fruits when bruised. The use of chemical preservatives is not discussed in the Report, although this method of preserving food is tempting to the producer. We may assume that the control over such preservatives in foods as boracic, salicylic, or benzoic acid, and the fluorides, to quote examples, which suggest possible injury to health, is carefully maintained under the Sale of Food and Drugs Acts. Presumably the smoke deposit on the kipper and the impregnated salt in pickled beef come outside the category of chemically treated foods. The Report as a whole, upon which this comment touches but lightly, is certainly cheering for the consumer.—*The Lancet*.

### MILITARY MEDICAL CONGRESS

The Medical Corps of the Belgian Army is organizing in Brussels for the month of June, 1921, an International Congress of Military Medicine and Pharmacy, to which are invited all the doctors and pharmacists having belonged to the armies of the allied and neutral countries.

At the close of the great events which have involved the nations from 1914 to 1918, it is interesting to coordinate the work of the different medical departments, and to compare, for the purpose of reciprocal benefit, the different results obtained; it is also useful to note the advances of military medicine during the war, so as to be able to condense them into lessons for future use.

Communications to the Congress, as well as the articles and reports concerning the different questions, must be sent by the first of April, 1921, to the General Secretary of the Congress, Docteur Jules Voncken, Hôpital Militaire de Liege, Belgium. The articles must be accompanied by a brief summary.

# ADVISABILITY OF ORGANIZING SPECIAL CLASSES FOR UNUSUAL CHILDREN\*

BY SISTER KATHARINE, O.S.B., PH.D., DULUTH, MINN.

**L**AWS bearing upon the training of subnormals are so uniform or nearly so that it would be tedious to refer to more than one or two other states. We find in the General Acts of Massachusetts, approved July 1, 1919, the following provision:

"The school committee of each city and town shall within one year after the passage of this act, and annually thereafter, ascertain under regulations prescribed by the Board of Education and the directors of the commission on mental disease, the number of children three or more years retarded in mental development who are in attendance upon the public schools in the city or town or who are of school age and reside therein. At the beginning of the school year 1920 the school committee of each city or town where there are ten or more children three or more years thus retarded shall establish special classes to give such children instruction adapted to their mental attainments, under regulations prescribed by the board of education."

The state superintendent of public instruction of Wisconsin<sup>3</sup> calls attention to the inadvisability of keeping children of varying mental levels in the same class room as follows: For several years certain schoolmen of Wisconsin have been keenly alive to the need of providing some sort of special care and education for those children who have manifested, by numerous and persistent failures, their inability to move along with their classmates in the regular school work. Perhaps no one thing contributes so much to slow progress, spiritless class recitations, and general inharmony and inefficiency as does the presence of the "dullard." Small as is his percentage in the school, he is often a considerable factor in determining the length of assignments as well as the rate at which the class work proceeds.

The Statutes of Wisconsin, 1917, Article 41,035, provide for the organization of special classes for those exceptional children. State aid is provided for districts maintaining these classes. The statute reads as follows:

Upon application by the district board of any school district embracing within its limits any village or city, or the board of education of any city, the superintendent may authorize such school district board or board of education to establish and maintain within the corporate limit of any such village or city, respectively, a special class for the instruction of exceptional persons of school age who reside in said school district or city. The courses, qualifications of teachers, and plan of organizing and maintaining such special classes shall comply with such requirements as shall be outlined by the state superintendent of public instruction. The state superintendent of public instruction shall appoint in his department a person of suitable training and experience who shall have general supervision of such classes and who shall give special attention to examining, testing, and classifying the pupils applying for admission to such special classes. . . .

Children recommended for examination for the special class in Wisconsin, and the same may be said of every other state, fell into one or more of the following classes, according to the report of the superintendent of public instruction: (1) Repeaters of two or more grades, without obvious reason other than defective mentality; (2) children showing age-grade retardation of two or more years (calling seven years normal for the first grade, eight for the second, etc.); (3) "problem cases," whose behavior or attainments caused superintendent, principal, or teacher to question the child's mentality.

Recognizing the existence of different levels of mental ability at such diverse altitudes as to make harmonious and uniform instruction practically profitless to a very large percentage of the children in our classes, would it not be well for us to consider the wisdom and expediency of organizing special classes along lines outlined in the main by the state departments, modified as need be to meet our specific needs and our large opportunities, spiritual and other. Quite recently the writer was told by a member of a community intimately associated with a Catholic school for subnormals in England that these subnormal children are finely sensitive to religious influences. May it not be that these minds, imperfectly able to reach the mediocre even in abstract reasoning processes, can be guided through sensation and imagination and the emotional activities to as high a realization of the supernatural as is vouchsafed to the more gifted? Is this not an added argument for a more humane consideration of the subnormal? The treatment of retarded children is or ought to be especially pertinent to those to whose care is given over the orphan, the deaf and dumb, and others who have a poor start in life.

No very extensive survey has been made of the mental status of children in orphanages; but from a survey made by Terman and others of an orphanage in California, the mental status of the children in that particular orphanage, at least, was more than 10 per cent below the level of a similar unselected group outside. Moreover, this was an orphanage, as Terman states, that was considerably above the culture and opportunities of a middle class home. The author is at present engaged in making a survey of an orphanage. The gross findings are not yet available, but the number of subnormals will, we think, from a preliminary survey, be slightly more than in an unselected group elsewhere, but on the other hand the brightest child the writer has had the privilege of testing was found in the one room at the orphanage where the survey has been completed.

The intellectual status of deaf children has been surveyed by Pintner, with the findings that deaf children are, as a rule, on a lower plane than are physically normal children in an unselected group.

## Dependent Child a Problem Child

The dependent child is, then, a problem child. We know this. No one expects the median intelligence of children in an orphanage to be as high as is the median of the children of the well to do. At times, however, one finds in a home for dependents a child that surpasses in intelligence children of large opportunities. The question for us to consider is, are we developing to the utmost the talent each child in our particular institution has natively? The orphan's start in life is, as a rule, poor; the opportunities for advancement are limited; most likely the best friend he will ever have is the Sister in the institution that has mothered him or the good parish priest to whom he may go for guidance in difficulties after leaving the Sisters' care. At best, his lot is unenviable, and any labor we may take upon ourselves to better his condition is wisely expended.

What are we going to do? Why not make a survey of

\*Part I of this article appeared in the February issue.

3. The State and the Public Schools, Cary, Madison, 1919.

the home to which we are attached to determine the number of children that are retarded a matter of two or three years? This survey will reveal also the native capacity of each child. Figure IV gives the results of such a survey made of a seventh grade. The children were each given an educational test and a mental test. They vary mentally from dull to very bright. Only one child is dull, one is very bright. The larger number of these children are normal, with a rather large percentage of bright children. The educational indices range from very poor to very good. Children whose position is between the diagonal parallel lines are in practically the same position on both axes—their educational index is about the same as their mental index. They are succeeding as well as their native ability will lead one to expect; but of the thirty-eight children here charted, only twenty-four are on the same position relatively on both axes. Five are doing slightly better work than would be reasonably expected, nine are doing poorer work than their mental index would justify. We will take, for example, the four children charted in the upper "Bright" column. We notice that their position should be two columns to the right, thus placing them in the "Good" column educationally. On the other hand, "Backward" children whose work normally would be "Poor" reach, one an "Average" and the other a "Good" rating. Probably these children are being urged unduly and there is no doubt that the nine children who are to the left of the parallel diagonal lines ought to be urged. Would it not make for more scientific and at the same time sympathetic work if each child were given a mental test and a standardized educational test so as to determine his position? No doctor leaves a general prescription for all patients who come to him. He diagnoses each case; no bridge builder constructs a bridge without knowing the carrying strength of each stick of timber and each ton of steel. The doctor has in view making the patient as nearly 100 per cent well as possible. We have in view the imparting of the great store of knowledge that is our inheritance and which, if we fail to transmit in its integrity, we become just to that extent debtors to coming generations.

But no doctor can make all patients 100 per cent well; so no teacher can turn out eighth grade graduates of the same degree of efficiency. The doctor is, as a rule, scientific in his treatment. He has only a limited list of medicines to help him out, but he does not use all of these in the same dosage for all patients. We have been trying to grind just the same amount of work and the same quality of work from each pupil; we have, on the whole, been using the same dosage of "educational medicine." We have succeeded in eliminating a very large number of children who could have learned had they been given the proper instruction and reasonable encouragement. Have we ever stopped to consider the reasons for the high educational mortality of children? Thirteen per cent of all children leave school in the fourth grade; 13 per cent in the fifth grade; 14 per cent in the sixth grade; 27 per cent in the seventh and eighth grades. In all, 67 per cent of our American children, even with added opportunities for educational advancement, leave school before finishing the eighth grade. To complete the list, 23 per cent leave after finishing the eighth grade; 10 per cent enter high school, but of these only 3 per cent graduate; 1.5 per cent go to college, and about 0.75 per cent complete a college course.<sup>4</sup> It is true, economic pressure may account for a portion of this elimination, but we think that the failure to take into account differences of mental altitudes is a very large factor.

We may expect to find that from 25 to 40 per cent of the children in our classes are subnormal on an age-grade basis. If the retardation extends over two or three years, the child is likely of the dull, moron, or rather definitely feeble-minded type. This, however, is not always the case. There may be environmental causes which we can all imagine, there may be physical disability. Why not have this group of children examined by someone qualified to administer the Binet-Simon tests, or the Pintner-Patterson performance tests, in case the children are deaf or speech defectives or show great nervous instability. Arrange the record of each child on a scattered diagram in accordance with his educational and mental status.

Figure V displays the mental and the educational status of 285 children. It will be noticed here, as in Figure IV, that the children in this school vary, as they do in every other, from dull to very bright, the larger number by far being in the normal group. Seven children in this school ranked very bright; forty were bright; one hundred seventy-six normal; fifty-one backward; and four dull. It will be noticed, further, that while the majority of these children are on the same position, relatively, on the vertical and the horizontal axis, as shown by their falling between the diagonal parallel lines, a rather large number are to the right of these and a larger number to the left. The four children who are grouped at the extreme top are in the "Near Genius" class, but these are doing only "Average" work. They need urging. Two children who occupy positions to the extreme right are only "Bright" mentally, but educationally they are doing almost 100 per cent work. They are doing work which we would expect from "Very Bright" children. A diagram of this sort would give any principal, or teacher, a rather fair diagnosis of the *accomplishment* of each pupil and of the school as a whole as compared with the *possibilities* of individual pupils and of the school as a whole.

Having completed this survey, would it not be well to gather all children who are retarded a matter of two or three years or more and whose intelligence quotient is from 50 to 80 or 85 per cent of that of a normal child into one room. Retarded children can easily be managed in the first four grades with the regular classes. Their progress will be slower, as we remarked above, but there will be progress. Retarded children from the fifth grade up could well be cared for in one room. There will rarely be any retarded child who is able to do much eighth grade work. Unless the system be large, not more than fifteen or twenty children will remain in school beyond the fourth grade who are in the retarded class. Give to these retarded children a minimum of academic work, from two to three hours daily; spend another two or three hours on industrial, manual, and physical work, with a view, not of immediate productiveness, but with a view of development through sensation and perception, since the child is only meagerly capable of abstract reasoning processes.

The question here suggests itself as to what can be done in the way of pure vocational training. More especially what can be done with the retarded boy or girl between the ages of fourteen and sixteen? In some states the compulsory education law has been extended to the sixteen year level. As far as possible, it would seem that the work assigned a boy or girl, especially of the retarded type, after the age of thirteen or fourteen, at least if the child be dependent, should be such as will help him or her along towards some special type of un-

<sup>4</sup>. Goddard: Human Efficiency and Measures of Intelligence, Princeton, 1920.



skilled labor or semi-skilled labor according to the grade of intelligence, after the protection of the home has been removed. Results of surveys of answers to questionnaires seem to indicate that the attitude of these retarded children when grown to fifteen, sixteen, or over is apt to be anti-social; they are dissatisfied; they are the easy tools of unscrupulous people; through carelessness or ingratitude they increase the accident risk of employers. We cannot vouch for the truth of all these statements; but, again, does there not seem to be a great deal of truth in the generalization?

### Need a Satisfactory Avocation

The boy and the girl of low grade intelligence are not able to reason out in advance the effect of an action; they are easily led; they lack stability of character. If we are to save them, we must teach them to do something that is not beyond their intellectual capacity; we must prepare them, if they are dependents, for some immediately satisfying avocation. Trabue says, "Psychological investigation of intellectual ability has revealed two classes of unhappy and inefficient persons; first, those who are employed at tasks that do not exercise the full strength of their intellectual powers and who therefore have time to think and worry about the more ambitious tasks they could do if given a chance; and on the other hand, those who are attempting tasks entirely beyond their intellectual levels and who are therefore constantly meeting failure and discouragement. Both classes of intellectual maladjustment are sources of discontent and danger." It is needless for us to remind ourselves that in such cases we must make use of such corrective means as are easily within our reach.

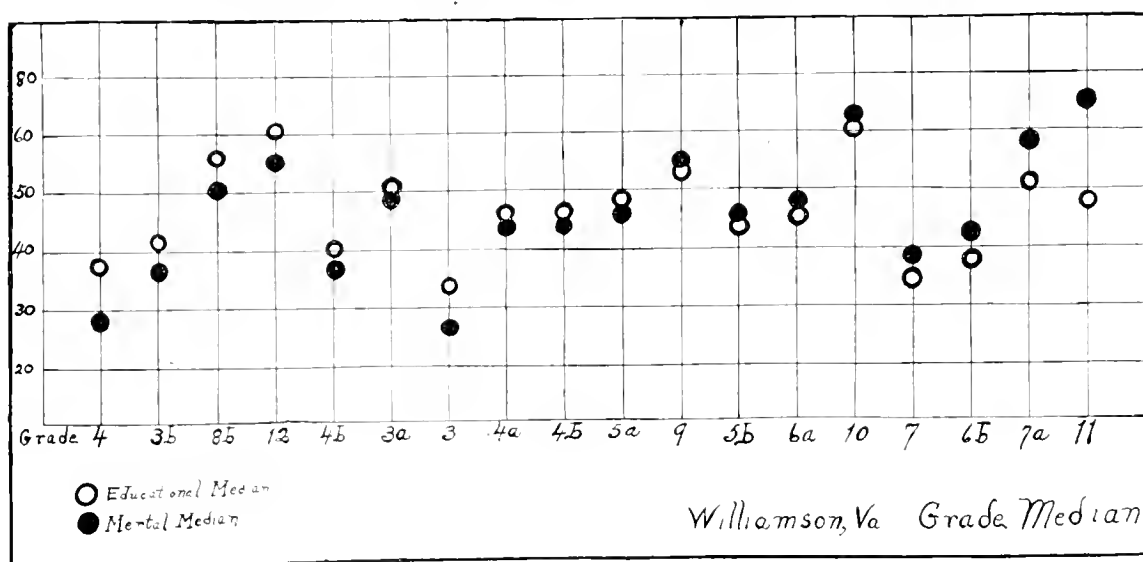
Before concluding this discussion of the retarded child we would like to call attention to a survey of another entire school from the third grade through the twelfth, or fourth year of high school. (Figure VI). The me-

educational median and the mental median are at the same level. In five classes the mental median is slightly lower than the educational median, or the teachers are getting slightly better work from the pupils than would be reasonably expected. In two grades, especially the 7a and 11, the educational median is high but the mental median is very much higher. Here is an opportunity for needed investigation. The results are far below the possibilities.

Second, note the high mental medians in the 8b, 9, 10, 11, and 12 grades. Elimination has taken place to such an extent that all retarded pupils have left school. Only three in every hundred pupils starting out in the first grade stay on to finish high school. We judge that 3, 7, and 6b are so-called "opportunity classes," or classes for retarded children. We notice that the mental status of 7 and 7a is twenty units apart. Looking at the array of grade medians, how, we ask, can a teacher succeed without some sort of diagnosis of the capability of the grade as a whole and of the individual pupil? How could the pupils of grade 7, for instance, work with those of 7a?

This diagram suggests that we have another class of children in our schools and in our homes. To this belong the few children who are mentally accelerated. What shall we do with the child that is decidedly above normal? Here and there, like an Alpine rose, we find a child that is a genius or "near genius"—a child that has an intelligence quotient found in one in two thousand.<sup>5</sup> In the past we have endeavored for the most part to cut everyone off at the same level, compel everyone to lock-step with the system. With insufficient teaching forces, lack of funds and other handicaps, it is difficult to tell what is best to do. However, for moral reasons alone it is highly inadvisable that bright pupils be compelled to lock-step with average and mediocre children. On the other hand, there is the temptation to push bright children, or at least to "show them off" or give them encouragement

FIG. IV. ACCELERATED CHILDREN HAVE FREE REIN FOR MENTAL DEVELOPMENT.



dian mental age for each grade is indicated on this plate by means of a black disc; the educational index is indicated by means of the circle. The median is the score above and below which there are just the same number of scores. If there are twenty-seven pupils in a class, the median score would be that made by the pupil who is fourteenth in rank. Many facts are indicated in a display of this kind. First, let us notice that in ten classes the

5. The author has under observation now a child who was given a test when barely thirteen, when she passed all the superior adult tests. This child was an orphan, in the seventh grade, and was reported as doing good work. She had made a grade every year. She is now doing the work of the first year of high school and is under observation under a class in theory of education. These students and their teacher are to help the child over difficult places and coach her in what may be necessary in the remaining work of the seventh grade and what work of the eighth grade as may be necessary. Her case will be observed with some interest, and there is a possibility that by working in the summer months she may still complete the high school work at sixteen and be qualified to teach at eighteen.

for accomplishments which lie easily within their realm. The very bright child needs simply free rein to go on as rapidly as his interests lead him. It is the dull child that needs encouragement. We would suggest, in lieu of any better arrangement, that bright children be given the assistance of a teacher to coach them several times a day in small groups so as to permit their making two grades a year or two grades in one and one-half years until they have reached the class that is at their own mental level.

Suppose a child be given a mental test at six and he is found to pass the test which the average nine year old passes. He is a superior child. He can easily, without urging, make two grades a year for three years, and by the time he is ten he will be at his mental level and can thereafter make just one grade a year and complete high school at fifteen instead of at eighteen, as would have been the case had he been held back to an age-grade level. Intellectual maladjustments discovered higher up can be condoned by a little coaching. This is true at least in a majority of cases. It is, however, difficult after the sixth grade, since so much new material is presented. The need of letting the bright child advance reasonably fast arises from the fact that if we do not let him work up to approximately maximum efficiency, we will develop an idler and a loafer at best; at worst, we will develop a wrongdoer, for the mind will keep working on something. If we do not permit of its being employed on the useful and good it will apply itself to the gross and wicked. The dull boy, on the other hand, is being constantly discouraged by his inability to perform tasks beyond his strength, tasks accomplished with ease by most of his fellows; he readily falls into the "no use trying" frame of mind. He works up to maximum perhaps for a time, but all school work, to be successful, must be glued by the mucilage of encouragement. He can get none if we are to measure him by the same standard as the bright children in the class. His work, measured even with that of normal boys, is unsuccessful. He soon loses interest. When such a boy or girl goes out into the world, he or she is accustomed to failure and looks for nothing else. If dependents, they drift from one "job" to another and, unless followed up, they will probably be found ere long in some penal institution.

### Remedy in Special Classes

Let us then think about organizing special classes for mentally retarded children. Let encouragement be the watchword in such classes, encouragement based upon the promise, "Whatsoever you do to one of these my least brethren, you do also to me." Let us turn out boys and girls whose lives have not been darkened by our attempt to force upon them work beyond the capacity bestowed upon them, but brightened by the joy of accomplishment, however simple the task.

In conclusion, let us remind ourselves that there are five and one-half million children in the United States that are in the unhappy condition of being deprived, through no fault of their own, of what, humanly speaking, is the child's right, "a joyous and orthogenic childhood." They must spend their adult life in mediocrity, poverty, or dependence. At least one million of these children are in our parish schools, at least one hundred thousand are in our institutions. It is un-American to deprive any child of the possibility of procuring adequate education. These mentally subnormal children are not able to profit by the type of instruction given in the ordinary class room. Our duty seems obvious. Better mental health will be fostered by the adequate classification and the proper handling of these educational misfits.

## RECONSTRUCTION THROUGH PLAY ACTIVITIES

The particular value of physical play activities in the treatment of the injured in industries is brought out in an article by Dr. Henry F. Kallenberg in the November issue of the *American Physical Education Review*. Formal gymnastics have their value, but Dr. Kallenberg emphasizes that the type of physical exercise which possesses pronounced remedial value is pre-eminently recreational. Workers injured in industries have in the past been greatly handicapped by unsatisfactory recovery, when a little more patience and persistent effort might have returned them to the workshop with a greater degree of efficiency and with a fighting chance to win out in the battle of life.

He recommends that play rooms be established in connection with convalescent wards in hospitals. Convalescent patients need mental more than physical treatment, something that will keep them from thinking about themselves and the surroundings. The article gives in detail a plan of recreational physical activities that will aid in helping to return the injured worker to his shop in as normal condition as possible.

## RECONSTRUCTION HOSPITAL ORGANIZES

The rehabilitation of workers suffering from industrial injuries or occupational diseases by the application of methods developed in war work will be the exclusive field of the Reconstruction Hospital which has recently been organized by merging the Park Hospital, the De Milt Dispensary, and the Clinic for Functional Re-education, New York City. This is the first hospital of its kind in this country. The medical staff of the new hospital includes: Dr. Joseph A. Blake, who was in charge of American Red Cross Hospital No. 2, in Paris; Dr. John A. Hartwell, Dr. Victor G. Heiser, Dr. Irving S. Haynes, Dr. Charlton Wallace, Dr. Charles L. Dana, Dr. Henry Sage Dunning, Dr. John D. Kernan, and Dr. Herbert G. Reese. It is headed by Dr. W. Gilman Thompson, who is an authority on occupational disease, as well as many other medical subjects. The Board of Directors is headed by Allen Wardwell, as chairman, and includes Ralph S. Stubbs, Frank H. Jones, Bishop-elect W. T. Manning, Andrew C. Imbrie, Gerrish H. Miliken, W. Emlen Roosevelt, Chester Alexander, Robert G. Mead, Mrs. Carlos d'Heredia, G. K. B. Wade, Elwyn W. Poor, and A. W. S. Cochrane.

## EYE SIGHT CONSERVATION COUNCIL

A permanent organization has recently been effected of the Eye Sight Conservation Council, which is made up of members representing various organizations devoted to health, welfare, education, science, and industrial betterment. The new organization is headed by L. W. Wallace, as president, who is president of the American Society of Industrial Engineers; Cassius D. Westcott, M.D., vice-president, Chicago, Ill., chairman of Committee on Conservation of Vision of the Council of Health and Public Instruction of the American Medical Association.

## COURSE IN CHILD HYGIENE

A postgraduate child hygiene course is being given at the State Normal School in cooperation with the Bureau of Child Hygiene of the New Jersey State Department of Health on sixteen successive Fridays, beginning November 12, 1920. The detailed program may be secured from the New Jersey State Board of Health.

## BOOKS OF THE MONTH

Comment on Current Medical and Health Literature  
and Announcements of New Books**THE SHIBBOLETHS OF TUBERCULOSIS.** By Marcus Paterson, M.D.<sup>1</sup>

To anyone interested in the tuberculosis problem, this book is fascinating in the extreme. The title itself fills one with curiosity which is stimulated to a still higher pitch on reading over the titles of the fifty-nine short chapters. The following are typical examples: "That Sanatoriums are no good," "That the Superintendent of a Sanatorium has a 'cushy' job," "That pine trees are necessary in the treatment of Tuberculosis," "That exertion causes Hemoptysis," "That a sea voyage is good treatment for Tuberculosis," "That good housing will eradicate Tuberculosis," etc., etc.

Throughout the entire book the very vivid personality of Dr. Paterson himself is strikingly in evidence as is likewise his firm belief in the value of the opsonic index as taught by Sir Almroth Wright and in auto-inoculation as carried on by Dr. Paterson himself.

There are several statements made by Dr. Paterson which will not bear analysis but which are none the less interesting reading. For instance, he devotes two or three chapters to prove that climate has no special value in the treatment of tuberculosis and to support this argument quotes figures showing that the death rate for tuberculosis is higher in Colorado and California than it is in many more crowded parts of this country and of England. Dr. Paterson knows, and if he does not know he certainly should know, that the cause for this increased death rate in the two above mentioned states is to be found in the great influx of advanced and dying consumptives who are sent there in the vain hope of a cure. It is quite foolish of him, or indeed of anyone else, to maintain that climate has no value in the treatment of tuberculosis. Because, for instance, the incidence and death rate of tuberculosis in Egypt is high, doubtless due to the faulty hygiene and methods of living of the natives, does not prove in the slightest that the dry climate of Egypt is not good for certain cases of consumption.

He devotes a chapter to proving that hemoptysis is never caused by exertion. To those of us who during the past winter have been able in our own minds at least to explain satisfactorily numerous pulmonary hemorrhages to unwise exertion on the part of patients such as the shoveling of snow or coal, his argument that exertion is no factor in the causing of such hemorrhages is not impressive. If he stated that in active ulcerating tuberculosis where the process is steadily advancing and in so doing erodes a blood vessel exertion or exercise is a factor of no moment, we would all agree with him, but he does not state this although he doubtless believes it.

He is evidently a firm believer in blood inoculations into guinea pigs as a diagnostic measure. This has practically been given up in this country. As above stated, his infinite faith in the treatment of tuberculosis by auto-in-

oculation is very evident and he holds up to some ridicule a certain very prominent American physician, an authority on tuberculosis, who is an equally strong advocate of rest and opposes auto-inoculation in any form and graduated exercises as carried on by Paterson. The truth probably lies mid-way between the two extremes. He draws the distinction, which is a most important one for those of us who live in New England to remember, that pure air does not necessarily mean cold air.

The book is full of epigrams and aphorisms. The following are good examples: "Changing a man's work is not treatment"; "It is not the diet that matters so much as the inducing the patient to partake of it"; "Fatness does not increase the specific resistance in tuberculosis"; "It is not the buildings of a sanatorium that matter, *but the man in charge of them*"; "Many homes for tuberculosis exist, but few sanatoriums."

It is easy to go through this book and find many points with which to disagree. It would be difficult, however, to find a book which on the whole would be more refreshing and more stimulating and a more welcome addition on this subject to our literature than this book.

J. B. H.

**TEXT BOOK OF NERVOUS DISEASES.** For the Use of Students, and Practitioners of Medicine. By Charles L. Dana, A.M., M.D., LL.D.<sup>2</sup>

This volume is the ninth edition of a textbook which first appeared twenty-eight years ago. The author states that the successive volumes present in a measure the advancement of neurology during that period. In this volume material bearing upon the important contributions resulting from the observations in the great war, have been added. A chapter has been added on endemic encephalitis and on psychology in its dynamic, descriptive, and physiological phases. No attempt is made to present the subject matter in accordance with various evolutionary "levels," and little space is given to endocrinology. Inasmuch as this volume is a textbook, it seems to the reviewer that this is a very wise procedure, as otherwise much controversial matter would have to be included. The volume represents a concise and comprehensive exposition of diseases of the nervous system, clearly presented, well illustrated, and especially adapted for teaching purposes. Of particular interest to the reviewer was the following paragraph in the preface: "I would add as showing a present somewhat hypomanic trend that more than twenty books have been recently published on psycho-analysis, about one-fifth being by lay writers. All these may be found in a general book store on counters much patronized by women." Whatever our individual views may be relative to psycho-analysis, until the subject has passed the controversial point, it would seem better to deal with the matter conservatively when presented in textbooks.

1. E. P. Dutton & Co., New York.

2. William Wood & Co., New York, 1920.

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**A TEXTBOOK OF DERMATOLOGY.** By J. Darier, physician to the Hospital Saint-Louis. Authorized translation from the second French edition.<sup>3</sup>

As anticipated, Pollitzer's translation of Darier's book is a valuable addition to the textbooks on dermatology. The illustrations are excellent and numerous. The chapters on tuberculosis and syphilis are extraordinarily good, while the one on treatment is not excelled by that of any other publication. The book is particularly valuable to the junior and senior medical student. There seems, however, to be scant attention paid to the literature of dermatology from other countries. Reference to many splendid contributions from American and other dermatologists has been omitted. The book should be included in every modern medical library.

J. S. EISENSTAEDT.

**THE PRINCIPLES OF ANTE-NATAL AND POST-NATAL CHILD PHYSIOLOGY.** Pure and Applied. By W. M. Feldman, M.B., B.S., (Lond.)<sup>4</sup>

One seldom finds a book that contains as much information as the present volume. The author has gathered a wealth of knowledge which he embodies in a small volume of 694 pages. He presents the reader not only with a great deal of data on the subject of ante-natal and post-natal physiology, but he discusses at length many allied subjects, such as theories of heredity, mechanics of development, and physiology of fertilization, the whole theses displaying a great deal of erudition and profound scholarship.

If there is any criticism on this excellent volume it is in the direction of the mathematical insertions scattered throughout the book. In some places the author devoted the greater part of a chapter to the presentation of mathematical formulas that detract from the interest of the book. He erred in the same direction in a previous publication, "The Jewish Child," a most valuable contribution in every other respect.

As a whole, however, one may find in the "Principles of Ante-Natal and Post-Natal Physiology" a great deal of interesting information. The volume would make a valuable addition to the library of every physician and scientist. Child care constitutes a highly important field in preventive medicine and such studies as this give it the proper scientific background.

**CLINICAL OPHTHALMOLOGY FOR THE GENERAL PRACTITIONER.** By A. Maitland Ramsay, M.D. With a foreword by Sir James Mackenzie, M.D., F.R.S.<sup>5</sup>

Mackenzie's belief that textbooks of the classic type are failures because of their foundation on pathology is responsible for this "specialty" book by a specialist who was in his earlier days a general practitioner. The book was reviewed by an internist who, of course, is in no position to pass judgment on the purely special side of it; but from his point of view it is a valuable volume. The general practitioner, even the more purely specialistic internist, requires an interpretation of symptoms and signs from a diagnostic and therapeutic point of view which he will be able to correlate with symptoms and signs in other organs. This has always been difficult to achieve; mainly, we believe, because books are written *for* specialists as well as *by* them. Ramsay's book seems to "hit the nail on the head"; even the difficult field of ophthalmoscopy is treated in a manner easily understandable by the average practitioner.

We can commend this book highly and trust that more of the same caliber will be forthcoming in the series promised by the publishers.

3. Lea & Febiger, Philadelphia, 1920.

4. Longmans Green & Co., New York, 1920.

5. Oxford University Press, New York, 1920.

# MODERN MEDICINE

A Monthly Magazine of Medical & Health Progress for Physicians  
& for Others Interested in Administrative, Industrial  
& Social Health Problems

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## THE NATION'S HEALTH

WITH the May issue the name of this magazine will be changed from MODERN MEDICINE to the NATION'S HEALTH. This is being done to make the title more clearly descriptive of the present scope and the new and greatly enlarged service of the magazine in health promotion and conservation.

The change is one which has been under consideration for some time. It is the final step in the development of a magazine which we confidently expect will be of distinctive service to those who are in positions of responsibility for the nation's greatest asset, the health of its citizens.

The change of name and the broadening of its field of endeavor complete the transformation of the *Interstate Medical Journal*, the predecessor of MODERN MEDICINE, from a publication devoted to clinical medicine, to a health magazine of broad national service—a magazine devoted to community, industrial, and institutional health problems.

The NATION'S HEALTH will continue those features which have proved most interesting and serviceable to the readers of MODERN MEDICINE, but will cover the subjects treated more completely, and in addition inaugurate other features which are important in the new and wider field.

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## THE SCOPE OF THE NATION'S HEALTH

THE NATION'S HEALTH will be devoted to the field of community health, with special reference to industrial and institutional health problems. The health of groups will be the central theme, whether the group be the workers in a plant, the students in schools or institutions, or the citizens of the community.

Industrial health and efficiency will receive increased attention and special emphasis will be placed upon the conditions in industry which make or mar the health of workers. The problems of industrial medicine will receive scientific attention with the assistance of the board of editors of the American Association of Industrial Physicians and Surgeons. Industrial efficiency, the improvement of working conditions, plant morale, the promotion of physical fitness, ventilation, illumination, and sanitary equipment will receive special consideration.

Community health, including organized health activities, public health nursing, and sanitation in its broad aspects, will be continued with emphasis upon the practical methods for the prevention of disease and the promotion of health and physical efficiency as worked out by experience throughout the country. Problems of infant welfare and child health, particularly the health of school children, will be specially emphasized.

Institutional health, including physical care, health service, and medical attention in institutions, boarding schools, military schools, and colleges, will be given the consideration which the importance of the health problems in the thousands of institutions deserves. The health and safety of summer camps and labor camps will be given their proper place in the program of promoting better health.

The organization of health workers, including the physicians, sanitarians, health officers, industrial managers and experts, public health nurses, and welfare workers, will receive an increased degree of attention in the new magazine. Group organization by physicians for private practice, public health enterprises, diagnostic clinics, health centers, and health education of groups, are some

of the subjects upon which the experience of the country will be mobilized. Curative medicine will be left primarily to the excellent journals which have always served the clinician.

The magnitude of the health service to the groups mentioned becomes apparent in consideration of the following facts: More than forty million workers are engaged in gainful employment. The majority of these work in groups of fifty or more, each group constituting a unit for industrial health service. There are twenty million children in the schools who should come within the range of health organization. There are more than five thousand private schools, institutions, and homes for the aged in which group health service is of prime importance. There are many thousands of summer camps and workers' camps where life and health are constantly endangered through the crudity of living arrangements.

All of these groups offer opportunities for the promotion of physical well being and working power as well as for protection against disease. We believe that the most effective work for the present time can be done with groups, and to that end the work of the magazine will be devoted.

### MENTAL DEFECTS AND CRIME

THOSE who occupy themselves with attempts to discern in the vagaries of the human mind a basis for the determination of the laws governing mental reactions are continually reminding us that there is no hard and fast boundary between mental defect and mental efficiency. The responses of high grade defectives, they claim, average quite favorably with those exhibited by people of sound mind but whose intelligence is of low grade, and under habitual, smooth-running conditions comparison may not reveal the inadequacy of the defective.

Even unsocial reactions may not safely be taken as an index of defect, for criminologists urge that all human beings are potential criminals, that whatever the degree of intelligence, a crisis is conceivable in which all organized inhibitions would fail to control and a so-called criminal reaction would result. The word crime itself is a variable, and gets its definition from the contemporary social conscience.

The growing mass of literature devoted to the study of criminals themselves rather than to that of crime and the problem of punishment, and the tendency to regard offense in the abstract in an effort to find the category to which the offender belongs, show the effort to evolve a science of criminology, an outcome which is hardly to be expected inasmuch as no exhaustive study of criminals in the mass is likely to be made and

because it is impracticable to ascertain the facts of the early history even of sane criminals.

Such studies as are made by Healy in his work on "The Individual Delinquent" merely emphasize the importance of individual study. They are not sufficiently extensive for particularly valuable generalizations. The work of Charles Goring on "The English Convict" brings out a "high association between crime and insanity," and manifestly the handling of criminals would be greatly simplified if the rather large percentage of all offenders easily recognizable as insane were certified and sent to asylums instead of to prisons. Mental defect in general, however, according to Sir Bryan Donkin,<sup>1</sup> whose review forms the basis of this comment, offers far greater practical difficulties. High grade defectives with no remarkable lack of intelligence may "show such constant and patent defects of conduct (indicating disorder in the sphere of the emotions or of morals) as to render them dangerous members of society." A rating, therefore, is not to be assumed on intelligence capacity, but the degree of defect is to be considered with the correlated conduct.

In the defective, self-regarding conduct is preponderant over social conduct. Orderly control by acquired motives is impossible to him. Such offenders should be amenable to preventive detention. Better still would be such observation and records from school age on of manifestly potential criminals as would form an authoritative basis for their classification. Where there is educability, social responsibility attaches, not merely for the provision of restraining care but for such training as will tend to develop useful habits. The human mind is a "social product" and the environment in which a given mind develops may be as much at fault as the constitutional defect.

The communication of Sir Bryan Donkin deals with the problems of definition under the English Mental Deficiency Act. Not much help as to classifications is afforded by our present knowledge of cerebral and other organic manifestations of mental disorders. Much of the research by the biometric method is open to dispute and the assumption of a "criminal diathesis" is obscure. Active measures toward reclaiming the criminal are necessary, and a careful study of the individual offender should influence far more than it does at present the sentences awarded in law." In the opinion of Donkin no judge should pronounce any imprisonment sentence unless he is personally acquainted by visiting prisons with the actual nature of the terms of imprisonment entailed by his sentences.

S. P. M.

1. Donkin, Sir Bryan, M.D., F.R.C.P.: Mental Defect and Criminal Conduct, *The Lancet*, London, November 13, 1920.



# PHASES OF THE AMERICAN RED CROSS IN EUROPE

BY THEODORE C. MERRILL, M.D., AMERICAN RED CROSS, PARIS

THE life of the American Red Cross in Europe has passed thus far through three stages which are fairly distinct, although they overlap to a certain degree. The organization now appears to be entering upon a fourth period.

The first stage was that of military medical and canteen service, hospital construction and aid, camp and relief activity, and refugee assistance—all of which were accompanied by fundamental health work which afforded not only a material contribution, but which was of a welfare and educational character. The type of such educational enterprise is represented by the tuberculosis and infant welfare campaigns conducted in France. These campaigns were analogues of the work constituting a major portion of succeeding periods. The more military and general service was instituted in many countries, namely, Great Britain, Belgium, Germany, Austria-Hungary, the Balkan states, Greece, Italy, West Russia and the Baltic states, northern and southern Russia, and Switzerland. It has necessarily existed in other countries to which special reference will be made, but in the periods following the first there has naturally been a decline in the military nature of American Red Cross functions, except as recently revived in Poland. American Red Cross help in the Central Powers during and immediately after the war was demanded, particularly in connection with prison camps and with the repatriation of prisoners released; there were instances of large numbers of prisoners being set free utterly without food and facing no prospect except starvation.

The second stage extends from the signing of the armistice to the spring of 1919. This period is represented by canteen, home communication, and similar services conducted for the benefit of large numbers of American soldiers awaiting transportation home. Military atmosphere continued with the Army of Occupation in the Rhine region. During this period the greater part of the French public health line was brought to a close.

## Efforts Devoted to Welfare

The third phase is the one in which we are most interested just now. It began in the spring of 1919 and extends to the first of October, 1920. This epoch is devoted to welfare, education, medical and surgical demonstration, refugee aid, typhus control and to national encouragement whose object has been to educate, so far as pos-

sible, various of the European peoples to a proper appreciation of health values. General utility has constituted a substratum of the American Red Cross; there has been a recrudescence of war relief in Poland; but the *pièce de résistance* of this period has been the demonstration afforded populations in Serbia, Poland, Montenegro, Roumania, and Albania. Of notable extent and value has also been the program in West Russia and the Baltic states, Italy, Greece, the Crimea, Constantinople, Budapest, and Vienna.

The fourth period is that now confronting the American Red Cross. It is one in which the American people at home are deeply and essentially interested, however insufficiently the importance of this interest may be understood in some quarters and by some of our people. In order to throw a little light upon it from the medical point of view, and for the purpose of showing how inevitable is the necessity for continuing the American Red Cross in Europe, the effort is here made to present something of a review of the third stage or epoch of what we may call the European American Red Cross. After offering this review, we may again advert very briefly to the impending fourth cycle in the era of evolution which has been unfolding most impressively since the collapse of the Central Powers.

When it became necessary to undertake war and post-war service in Europe, five types of activity were prescribed for the American Red Cross: (1) Emergency work for all ages and classes. (2) Health and sanitary counsel for country and locality. (3) Demonstration of methods for the



The American Hospital at Niksic, Montenegro.

care of children, ante- and post-natal. (4) Training of native workers to become nurses, health visitors, etc. (5) Care of orphans, especially war orphans.

Since our attention is directed chiefly to the third stage of European endeavor, we shall allow these five types of enterprise to illuminate the historical period whose close is imminent.



The regular morning line-up at the American Red Cross Dispensary, Kolachin, Montenegro.

Flood, fire, famine, disease, cosmic forces, and anything else that our transportation companies might class as acts of God contain an appeal which is irresistible. When the human race brings down calamity upon itself, the call for aid provokes response which is no less ready and sincere than the answer in the absence of human responsibility. In this third period the principal emergencies have been those of famine, cold, and disease; which, in turn, have resulted from the war and must be attributed to human deficiency. With these emergencies, and almost as important as they, must be associated mutilations which cripple the bodies and impair the economic utility of the unfortunates who sustain them.

### Emergency Speaks Imperatively

The main medical emergency of this epoch promised to be that of epidemics. Just at the close of the period, however, we must include the emergency constituted by the need for first aid, surgical dressings, and surgery as created by the Bolshevik advance in Poland.

Epidemics have been those of typhus and cholera. Typhus was widely distributed in Poland and Serbia during the past winter. It threatened to sweep through the Baltic states, but was arrested by the American Red Cross as directed by Colonel E. W. Ryan, Commissioner to West Russia.

The measures adopted were exaction of cleanliness and enforcement of quarantine and delousing regulations. The governments of Latvia, Estonia, Finland, and Lithuania recognized their inability, and it was their appeal to the American Red Cross which resulted in the abolition of the disease. From February 25 to April 13, 1920, vigorous regulation was enforced in seven cities; 4,950 typhus cases were supervised and guarded.

Causes of the spread, as given by the Commissioner, were: Entire lack of hospital discipline; overcrowding of patients; and general filth and laziness.

The statement is made by physicians returning from the Baltic states that there is no excuse for a recurrence of typhus during the coming winter. However, the European scene may quickly change and nobody can surely predict what will happen. At present American Red Cross personnel are on hand in seventeen cities within the Baltic states.

Cholera, as occurring in the Crimea, included 3,122 cases cared for, with 1,204 deaths.

Up to the time of the unfortunate Polish advance into Kiev and the invasion of Poland by the Bolshevik army, laboratory, hospital and orphanage work was considerable; and the typhus and refugee situation had been greatly ameliorated. All such endeavor was arrested by the military operations of last spring. American Red Cross reverted to first aid and surgical relief of the military nature which is primordial in Red Cross history. Five railway cars were equipped with supplies and personnel and attached to the Polish army. Statement is made by the Commissioner to Poland that "but for the cars, thousands of wounded would have had no treatment for a long time. Some of the wounded arriving at Bresz Litovsk early in the offensive had not had their wounds dressed for eight days." Figures reported for the cars show that cases treated between July 23 and August 31, 1920, were: medical, 380; surgical, 4,642. This is an understatement, as the cars were directed by the Poles and some of the work done by the American Red Cross does not appear in American records.

So much for emergency service in the American Red Cross third phase.

Sanitary, medical and health help for towns and nations, as a mass effect, has been most substantial in in Serbia, Poland, Montenegro, and Albania. First of all, has it been necessary to handle disease conditions, but teaching of the backward people has been maintained along with treatment of cases. The treatment has been medical and sur-



An heir of the clinic at Elbasan, Albania.

gical, mostly of the general type, but with occasional chance for special work. Hospitals, dispensaries, orphanages, and clinics have been the media of expression. For a long time before the war there was no hygiene, sanitation, or public health in these countries which was actively practised by the mass of the people. The war added to previously existing evils and then took the lid off so that all the world might see. Teaching by the American Red Cross and other organizations is believed to have provided the "first steps in national hygiene" for nations which, during centuries, have been victims of indolence, ignorance, oppression, and wholesale graft. The actual effect of the relatively brief service of these organizations is conjectural. Some of the field personnel report a perceptible impulse toward improvement. Others are skeptical. When one considers the discouragements which attend all public health effort at home, but also remembers the progress that unmistakably accrues, he need not necessarily feel that the labor in Europe has been lost.

The program has been about the same in Serbia, Montenegro, and Albania, according to the essentials just mentioned. Another aspect of Red Cross work has been subordinate in these three countries but has given a color of its own to Poland. This character is that of aid and cooperation as manifested in hospitals and other institutions directed not by the American Red Cross, but by native physicians and surgeons. Few hospitals in Poland have been administered by the American Red Cross: here the line has been in the direction of contributions of food, clothing, and equipment, the American medical personnel working under native directors. This is one of the reasons explaining the limited medical figures which the Red Cross can show for Poland, speaking in the statistical sense. The effort is reflected

in food, clothing, and supply records; but some of the more strictly medical detail must be sought in records made by the Poles, and some is lacking for reasons mentioned below.

The subjoined Charts I, II, III, IV, and V illustrate the medical relations of European *pièce de résistance*. Those for Serbia, Albania, and Montenegro speak for

themselves, being based on cases actually reported by hospitals, dispensaries, and clinics. The same is true of the surgical and dental graphs shown on the Polish chart, their small number being due



The American Red Cross dentist in Belgrade.

chiefly to two factors, namely, the emergency and general relief character of the Polish activity and the recurring military operations, which interrupted the developing program. The medical graph on the chart for Poland includes general medical and surgical relief as well as treated cases.

The charts refer to February, March, April, and May, 1920. It is regretted that accurate report has not been possible earlier. The fact is partially explained by reasons just mentioned; other factors are failure to appreciate the value of careful record, lack of time to devote to "paper work," defective transportation, interruptions, delays, many of which could not for a long time be eliminated in the face of existing pressure, demand, and lack of clerical service.

Limited as it is to medical and surgical relations, and these, too, being restricted to the professional side, this résumé must remain as an incomplete portrayal unless supplemented by similar summaries which the supply and nursing services can alone compile. A trilogy of the nursing, supply, and medical lines of the American Red Cross in Europe, presented in one popular or semi-popular article, does not, perhaps cannot, exist; official reports and fundamental figures repose in the archives against a time when leisure and personnel may be found to transform them into living pictures.

Typhus is major, cholera coming next in importance. Typhus is at a maximum in winter and at a minimum in summer, the periods being reversed for cholera. The influence of summer on any gastro-intestinal disease is well understood; the typhus summer minimum is not due essentially to season, but is an indirect and negative result, the heavy winter incidence depending on the crowd-



A case of noma seen in Serbia. Cases resembling noma sometimes prove to be anthrax.



Children taking the sun cure at the tuberculosis hospital in Vienna, aided by medical supplies from the American Red Cross.

ing and heavier clothing consequent on cold weather, the life of the body louse being thereby favored. During the winter typhus—especially in Poland—tuberculosis, influenza, pneumonia, bronchitis, tonsillitis, and the exanthemata are most numerous. There is always much eye disease—especially conjunctivitis; not much trachoma—abundant skin disease, and considerable otitis media. On the approach of spring and summer, malaria and dysentery appear. In the southern parts of central Europe estivo-autumnal malaria, and the other varieties, are extensive and serious. We have not had positive diagnoses of amebic dysentery. "Sandfly," or pappataci fever, abounds.<sup>1</sup> Typhoid, tetanus, dengue, and relapsing fever vary in frequency; tetanus is largely avoided by prophylaxis. Bone and gland tuberculosis has occupied much hospital and dispensary attention; there is plenty of pulmonary tuberculosis, but space and personnel are inadequate for intensive treatment by the Red Cross and practically no sanatoriums exist, so that such cases are largely neglected.



The beginnings of oral hygiene in France

1. Castellani and Chalmers: *Manual of Tropical Medicine*

Southern Europe is marshy and mosquitoes breed freely. Food is prepared and handled in shop or home with no reference to protection or cleanliness. Soil pollution being uncontrolled, intestinal parasites of all kinds are harbored alike by young and old. Scabies is a mere commonplace. Many inoperable cancer cases have been reported.

Dental service is highly appreciated, there being few competent native dentists. The same is true of surgeons. Theoretically, there are some excellent surgeons, but they are not capable in the practical sense. A valuable Red Cross contribution in Serbia consisted of an artificial limb shop, operated as an object lesson, as well as to supply a serious lack. It developed a type of apparatus especially useful for local conditions and in relation to knee disarticulation. A store of wood was accumulated to be seasoned for later use. Nearly one thousand cases needing artificial limbs were supplied by this shop between April, 1919, and June, 1920, when it was turned over to the Serbian government.

### Child Hygiene in Practice

Considerable theoretical hygiene for infants and children was taught before the war, but throughout Europe effective practice of the sort has largely lapsed into oblivion. The scene revealed by the war causes one to doubt whether child hygiene was, after all, anything generally adopted. Recent work by the English, French, and Italians reflects great excellence, keen individual interest, and a strong reaction to the unrivaled stimulus imparted by the grave results of the war. All European governments are rising to meet the population crisis and encourage every influence tending to preservation and development of the young.

Children have constituted a large proportion of the patients cared for in American Red Cross hospitals and dispensaries. Home visits by the medical and nurse personnel, addresses to mothers, and demonstrations in dispensaries and clinics have been inseparable from the program. Pediatric teaching has been especially prominent in France, Italy, Roumania, and Greece. In France most of the child activity has been situated in a portion of the devastated area toward the north; it has included the recuperation of poorly nourished and pre-tuberculous children from the vicinity of the former front, a number of them having been placed in French homes on the coast and in the South. Child centers were established in Italy; American Red Cross personnel no longer remains there, but the Italians are carrying on the ideas imparted to them and their

pediatric leaders have plenty of originality of their own. In Greece child centers persist at Athens, Canea, Patras, and on an island of the Cyclades group. A large dispensary is continued at Salonica. The effort is always to enable the native people to handle their own problems.

Roumania has enjoyed special attention in the child problem, some half dozen stations having been established there. The Red Cross has withdrawn, but another—British—organization will probably continue. Study of small groups of children is being made in south Russia. In Czecho-Slovakia a nurses' program has been instituted by the new state, two able native women having been sent to America for study designed to fit them for directing a national nurses' movement in their country. The new development will include special attention to the needs of the youth, for exercise and athletics for girls and women, boys, and men are being especially encouraged by large associations, the Sokols.

In Montenegro a group of 210 school children, about equally divided between boys and girls, was inspected by a native physician, Dr. Matanovich, and classed in four age groups, the diseases most noticeable being indicated in the table; the diseases are mentioned in the order of frequency:

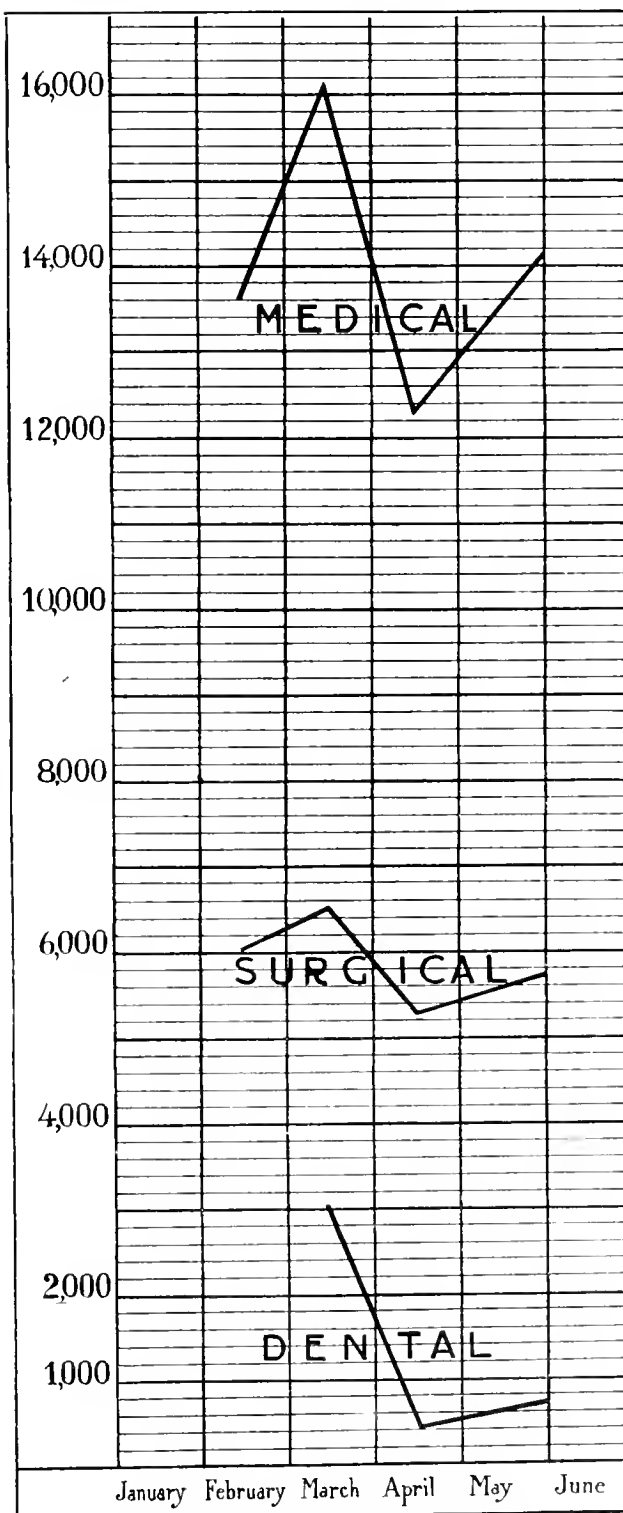
TABLE I.—TABULATION OF AN EXAMINATION BY A NATIVE PHYSICIAN OF 210 CHILDREN. AGE-GROUPS ARE INDICATED, AND THE DISEASES ARE MENTIONED IN THE ORDER OF THEIR FREQUENCY.

Group 1 7-8 years	Group 2 9-10 years	Group 3 10-11 years	Group 4 11-12 years
Tonsillitis Anemia Cervical adenitis Scabies	Anemia Tuberculosis (pulmonary) Tonsillitis Malaria	Anemia Tonsillitis Cervical adenitis Bronchitis Malaria Myopia Scabies	Anemia Tonsillitis Cervical adenitis Tuberculosis (pulmonary)

An adverse influence not infrequently encountered is the tendency manifested by the native mothers—and not alone mothers—to attend clinics, listen to addresses and otherwise meet the Red Cross educational effort solely because they expect to receive donations of food or clothing. The idea of education for education's sake, and for assuring future advantage to the individual and community, is not readily grasped. The American Red Cross has continually to guard against permitting educational activity to degenerate into a mere charitable distribution of goods and chattels.

Something of this departure has been indicated in speaking of Czecho-Slovakia. In Italy and Greece there are nuclei of native nursing personnel. The idea is taking root in Roumania. A powerful counter-influence, which must usually be combated, is the prejudice existing almost universally in central Europe against the profession

CHART I.—THIS CHART SHOWS THE MEDICAL, SURGICAL, AND DENTAL SERVICE RENDERED BY THE AMERICAN RED CROSS IN SIBERIA IN FEBRUARY, MARCH, APRIL, AND MAY, 1920, AS REPORTED TO THE MEDICAL BUREAU, PARIS.



TOTALS CHARTED ABOVE •

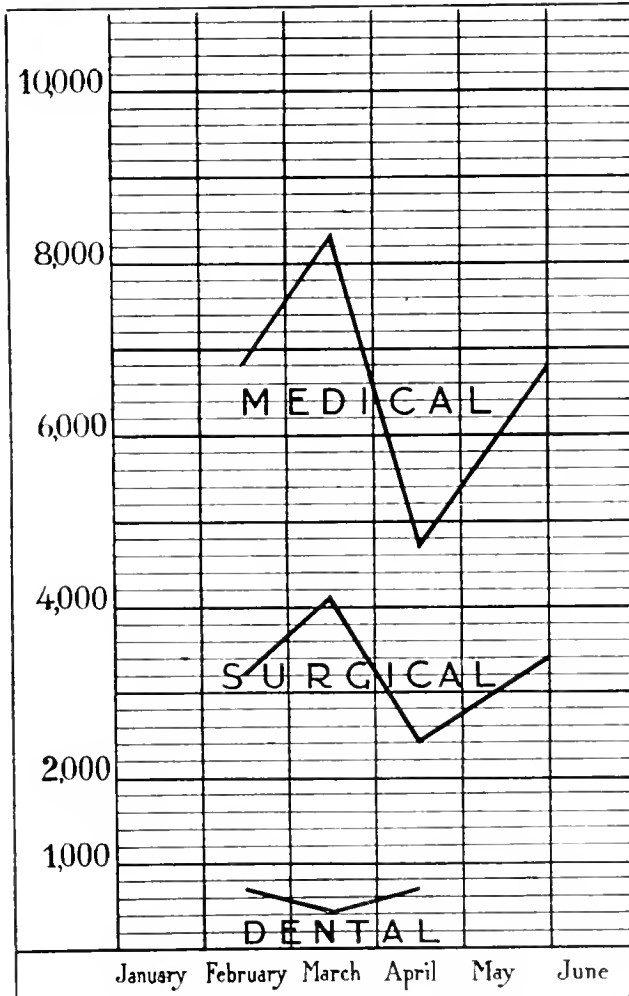
MEDICAL CASES	56,082	Number of Hospitals	9
SURGICAL	" 23,440	" " Dispensaries	10
DENTAL	" 4,092	" " Orphanages	2
<b>TOTAL</b>	<b>83,614</b>		

STATISTICS PREPARED BY DR. T. C. MERRILL A. R. C.

of nursing, which is considered degrading and unworthy the attention of capable, important, and educated (*sic*) persons. However, it has been found possible to interest women and girls of the middle and lower classes, selection being made of the intellectually capable among a number none of whom have received much education. No nurses' salaries worthy of the name are yet provided.

In several cases, education has extended to physicians and surgeons. A very competent physician (general medicine and pediatrics) has been developed in Montenegro and another in Albania; also in Albania, a surgeon has been made very capable by faithful effort on the part of the surgeon supplied by the American Red Cross.

CHART II.—THE AMERICAN RED CROSS MEDICAL, SURGICAL, AND DENTAL SERVICE IN ALBANIA FOR FEBRUARY, MARCH, APRIL, AND MAY, 1920.



#### TOTALS CHARTED ABOVE

MEDICAL CASES,	26,725.	Number of Hospitals	4.
SURGICAL " ,	12,741.	" " Dispensaries	4.
DENTAL " ,	1,837.	" " Orphanages	1.
TOTAL CASES		41,303	

STATISTICS PREPARED BY DR. T. C. MERRILL, A. R. C.



This hospital in Athens, Greece, is aided by the American Red Cross.

Orphanages have naturally co-existed with hospitals, dispensaries, homes for the aged and similar institutions in all European countries. They have struggled along under the serious difficulties of insufficient food, fuel, and clothing. The American Red Cross has aided these institutions by supplying deficiencies and caring for the sick. In some of the institutions, isolation of infectious cases was secured only after long and persistent effort, insistence, and persuasion, directed to official influences which controlled the allocation of buildings and rooms, as well as to crude ideas which had never valued sanitation or hygiene. In Serbia this difficulty was embryonically combated by a policy, local and limited, contemplating the placing of orphans in good homes rather than in formal institutions. To be effective, such a policy would need a time longer than that yet available to the American Red Cross.

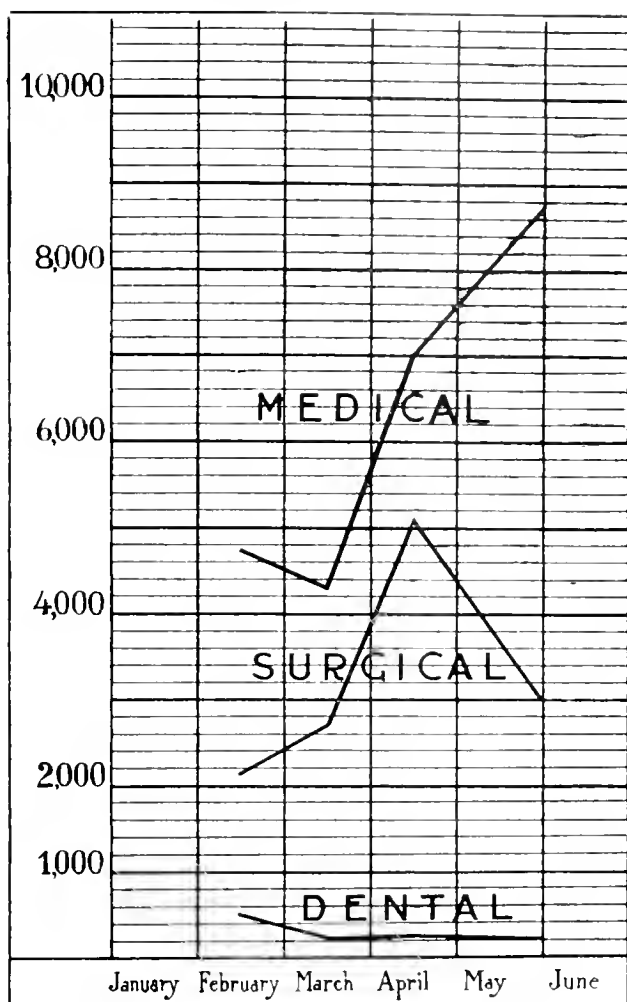
In Poland, a large orphanage, containing about seven hundred children, was situated at Bialystok; it had to be moved from under the oncoming Bolsheviks and was transported across Poland. In Albania there was one Red Cross orphanage, in Montenegro four, and in Serbia two. Help has been extended to hundreds of orphanages; great distress in orphanages at Budapest, Vienna, and Constantinople has been ameliorated by contribution of supplies. Czecho-Slovakia and Russia have been among the countries thus benefited. Such work constitutes a large and important function of the Junior Red Cross.

#### The New Era of Service in Europe

Although there has been a notable reduction in the overseas personnel, the duties of the organization in Europe have not ceased. The American Red Cross will maintain a foothold in several countries engaged in that most valuable, because fundamental, endeavor—the promotion of



CHART III.—AMERICAN RED CROSS SERVICE, MEDICAL, SURGICAL AND DENTAL, IN MONTENEGRO FOR FEBRUARY, MARCH, APRIL, AND MAY, 1920.



• TOTALS CHARTED ABOVE •

MEDICAL CASES	24,554	Number of Hospitals	4
SURGICAL	"	Dispensaries	4
DENTAL	1,296	Orphanages	4
<b>TOTAL</b>	<b>38,794</b>		

STATISTICS PREPARED BY DR. T. C. MERRILL A. R. C.

interests of the child. Poland, Montenegro, and Albania will be represented in this effort, and Czecho-Slovakia will receive some attention.

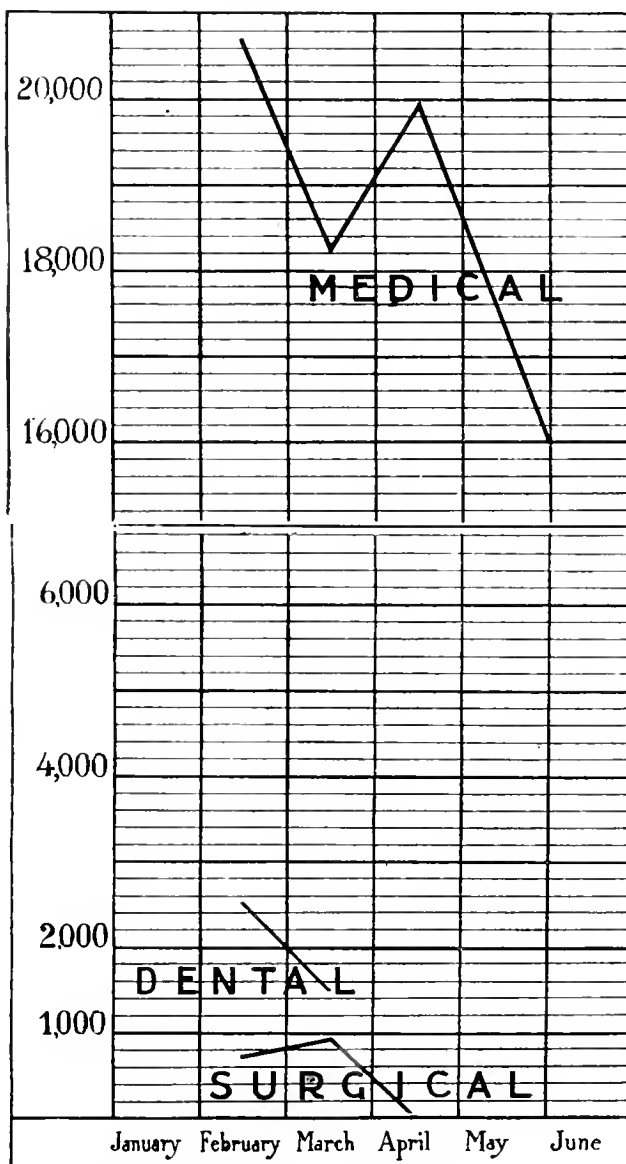
Russia, also, is beginning to loom into the Red Cross horizon, but is naturally not yet an objective, except as already indicated. There is no question as to the terrible nature of conditions in Russia and the need for relief there; but the political atmosphere does not yet warrant a Red Cross response to the prayers which reach it from many Russian places. Russian refugees, scattered widely from the Crimea, are being assisted along the shores of the Adriatic, in Serbia and about Gallipoli and Constantinople.

The American Red Cross cannot do less than remain in Europe while there is urgent need for

it, from the humanitarian standpoint in relation to the interested countries. It constitutes a healthy and important stabilizing force amid the whirl of conditions accompanying rehabilitation; and its stay is required by reason of public health considerations.

The world has a vital interest in the prevention of spread all over it of epidemic disease from the active European centers. Against some of the infectious diseases there are more or less effective preventives, as in the case of smallpox, malaria,

CHART IV.—AMERICAN RED CROSS MEDICAL, SURGICAL, AND DENTAL SERVICE IN POLAND FOR FEBRUARY, MARCH, APRIL, AND MAY, 1920.



TOTALS CHARTED ABOVE

MEDICAL CASES	74,900	Number of Hospitals	3
SURGICAL	"	Orphanages	1
DENTAL	"		
<b>TOTAL</b>	<b>80,595</b>		

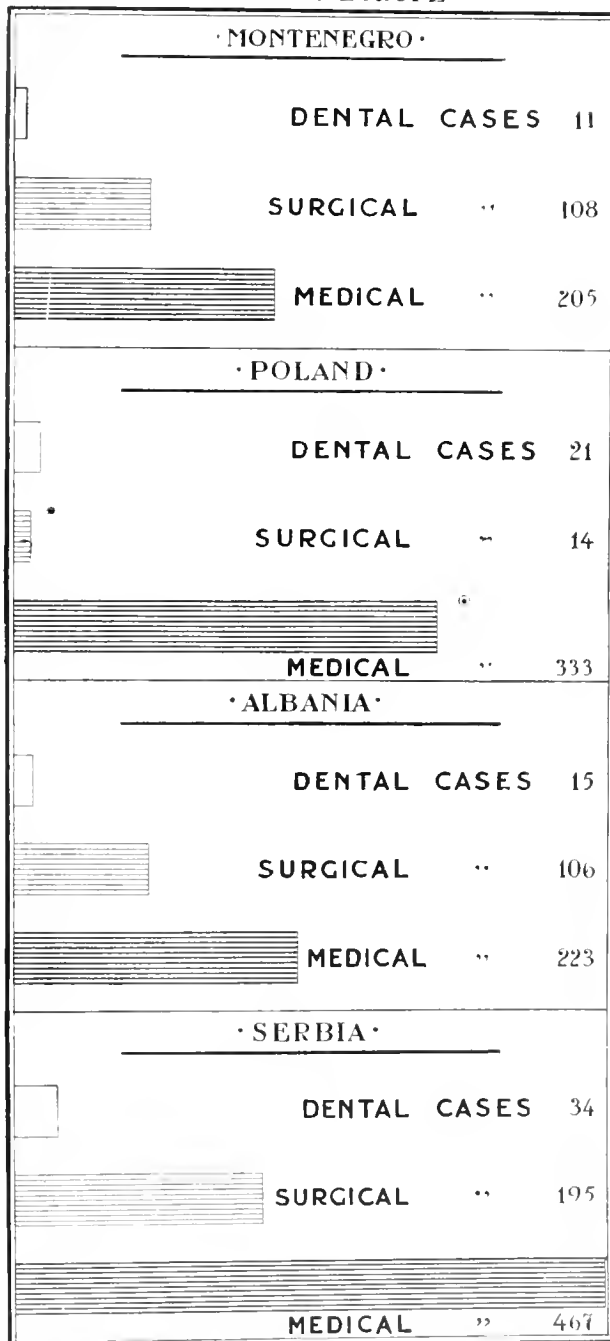
STATISTICS PREPARED BY DR. T. C. MERRILL A. R. C.

syphilis, diphtheria, tetanus, and typhoid; or at least there is supposedly adequate treatment. For some of these diseases, such prophylaxis and treatment may be employed on the home European

field or in countries receiving persons so infected. Other affections, however, are not readily amenable to the specific method of control, and emigration of carriers must be prevented.

CHART V.—THE AMERICAN RED CROSS ACTIVITIES SHOWN IN THIS CHART ARE BASED ON CASES ACTUALLY REPORTED FROM HOSPITALS, DISPENSARIES, AND CLINICS.

### AN AVERAGE RED CROSS DAY IN CENTRAL EUROPE



- The small number of surgical cases in Poland was due to political conditions.
  - Including general medical relief, aid to hospitals, dispensaries and orphanages and distribution of medical supplies.
- Facts represented are based on field reports for February, March, April and May 1920.

STATISTICS PREPARED BY DR. T. C. MERRILL A. R. C.

### Fundamental Interests

The child now comes into the limelight as the most important asset to Europe. Effort is being made to find methods of cooperating with governments which are especially interested in their children. It is hoped that American sympathy may be a support during the coming months, not only in material things, but as an influence welcome for the sake of considerations not directly material.

The guiding principle of the American Red Cross will be: help the native peoples to use their own methods in helping their own child life. There is no intention to impose Americanism upon other ethnic groups.

To America, then, the American Red Cross looks for backing and wholehearted interest in its European plans. The organization is grateful to the American public, whose spirit it reflects, for approval of enterprises devoted to infancy and childhood, and, through them, to the home. It is upon the home, the child, and the infant that the Red Cross attention will be concentrated during the year 1921. Better homes in Europe will mean, at a later time, better homes in America and citizens impregnably fortified to continue, firmly and honorably, the best that there is in the institutions we love so deeply in the land of Uncle Sam.

### REQUIRE MEDICAL AID FOR CHILDREN

Employers of non-medical healers were threatened with prosecution for manslaughter or neglect, on proof of failure to provide proper medical attendance for their children, by Thomas Lee Woolwine, district attorney of Los Angeles County, is a recent letter to Dr. Rea Smith, president of the Los Angeles County Medical Society.

The letter asked the cooperation of all members of the medical organization in reporting cases of alleged violation of state laws covering the care of children as a "work of mercy and justice."

It should be understood, the letter said, that the fanaticism indulged in by such practitioners, by whatever name they may be called, could not be urged by any parent as a lawful excuse for failure to furnish necessary medical attendance for children in case of serious illness.

Further, I am satisfied that, in case death should result from such omission, such parent would be guilty of manslaughter.

It is, of course, well known to members of your profession that parents suffering fanaticism and delusions to allow their babes and children to die of malignant and contagious diseases, feloniously refusing to provide that medical aid required by the statutes of California.

The number of helpless infants who have been robbed of life and allowed to die under such circumstances since this peculiarly dangerous and inhuman fanaticism has been promulgated, has undoubtedly reached appalling proportions in the United States.

# AMERICAN SOCIETY FOR THE CONTROL OF CANCER

BY FRANK J. OSBORNE, EXECUTIVE SECRETARY, NEW YORK CITY

UP TO July, 1919, 76,433 American soldiers were killed or died of wounds or disease in the Great War. During the same two years it is estimated that at least 180,000 people died of cancer in the United States. Stated in another way, there is now an average of ten deaths from this disease in this country each hour, or one every six minutes. This high mortality from cancer is not new, though it is increasing each year. Many years ago it was noticed that this disease was becoming more and more prevalent, not only in this country but in European and other countries as well.

As far back as 1904 the American Medical Association appointed a committee which reported in favor of educational work regarding cancer. This resulted in the formation of the Council on Health and Public Instruction through which the largest American organization of physicians became active in the education of the public regarding subjects of health, and has since prepared and distributed many valuable pamphlets on cancer.

The surgeons of the country also realized the great significance of cancer as a cause of death and appreciated also by personal experience that

thousands of lives could be saved if they could persuade the patients to come earlier for treatment. The Clinical Congress of Surgeons of North America, therefore, designated a cancer campaign committee which in 1912 secured the publication of a number of popular articles in widely read magazines such as the *Ladies' Home Journal*, *McClure's*, and *Collier's Weekly*.

*Several things are essential if the general public is not to remain unable to assume the initiative and to be unreasonably dependent upon the fortuitous advice in matters pertaining to maintenance of health.*

*The habit of examining and criticising results must be developed if any independent judgment is to be safely risked as to the value of any given health measure or as to the efficacy of any preventive work.*

*General health propaganda should offer universal information as to preventive measures in the more common maladies, should protect the masses, and the habit of taking a periodic health inventory should be the safeguard of the individual.*

In the following year the American Society for the Control of Cancer was organized to attack the problem in a uniform manner on a national scale, the project growing out of the earlier attempts to educate the public, the specific impulse being an outgrowth from the work and report of a special committee of the American Gynecological Society, a group of physicians whose lot it is to treat diseases of women. Pre-

vious to the meeting at which this report was rendered at Washington in 1913, held in connection with the terminal Congress of American Physicians and Surgeons, the Committee had conferred with a number of experienced health workers and interested laymen. A definite need was demonstrated for such an organization, since none of the other national public health agencies was covering this field, and funds were guaranteed the Committee by five philanthropic laymen, provided the undertaking should meet the approval and support of the medical profession.

Immediately following the report of this special committee, delegates were appointed from all the special medical societies associated with the Congress of Physicians and Surgeons and the new Society was launched under their direct auspices

within two weeks thereafter. An office was opened and active work began on January 1, 1914. The American Medical Association, the American Surgical Association, the Western Surgical Association, the Southern Surgical and Gynecological Association, the American Public Health Association, and many other sectional, state, and local medical societies have since indorsed the



"I have just become the Secretary of our Local Committee for the Control of Cancer. The message of early treatment must be spread."

Public health suffers because so few of the people have been sufficiently informed of the advantages of health supervision.



"All persisting lumps or other unusual conditions in women are suspicious -- It might be cancer. --- Please see a good doctor."

The public health nurse affords a means of enjoining precaution when and where it may be expected to become effective.

movement and appointed cooperating committees. The American Association for Cancer Research is made up of that group of scientific investigators working to ascertain the cause of cancer and the most effective methods of treatment, and many of its leading members are also active in the educational work of the newer Society. The various medical journals of the country are constantly rendering the finest cooperation in this respect.

The purpose of the Society, as stated in its constitution, is "to disseminate knowledge concerning the symptoms, diagnosis, treatment, and prevention of cancer; to investigate the conditions under which cancer is found; and to compile statistics with regard thereto." The Society, operating throughout the United States and Canada, is constantly enlisting the cooperation of all forces and agencies, lay as well as professional, which can assist in its twofold purpose of public education and statistical research.

Like all other national public health organizations, the American Society for the Control of Cancer is favored with a generous amount of purely volunteer service. This fact alone has made it possible for the Society to carry on its many activities with success and to keep the importance of the subject constantly before the medical profession and the general public. The campaign for the control of cancer is not surrounded with the popular appeal enjoyed by that for baby welfare or child health; nor does it lend itself as readily to public support as does the attack against tuberculosis or even the venereal diseases which were given so much attention by the Government during the war.

It was, therefore, thought best by the founders of this movement not to attempt to maintain a large staff of salaried officers but rather to call upon the members of the profession whose interest was already crystallized by a long and sorrowful experience with this disease, to prepare information and carry it to the people by literature, lectures and wise publicity. While this has entailed an immense amount of work upon the members of the Board of Directors and Executive Committee as well as those special committees appointed for

the purpose of making a definite investigation or writing a pamphlet on some particular phase of the cancer problem, it has insured to those contributing to the support of this work that the major part of the funds collected went straight into the preparation and distribution of educational material.

### Methods of Control Employed

The American Society for the Control of Cancer, which during the past few years has taken a recognized place among the half dozen leading public health agencies of the country, now stands as a liaison agency between scientific investigators of the cancer problem and the various social forces and agencies through which the practical knowledge of cancer control may be carried to the general public. The Society maintains a headquarters office in New York City with an executive secretary and

two assistants and stenographers, and acts as a bureau of information for the circulation of literature, statistical data, suggestions and methods to be used by state and local committees and workers. No less than eighty thousand pieces of literature have been sent out during the past year to physicians, boards of health, nurses and social workers, women's clubs, medical and



"This formula was brewed by Hawk-Eye, Chief of the Choc-taws in 1611. Never fails to cure epitheliomas and neoplasia."



"Everybody at the factory got one today. - Had we known these things four years ago, father would still be with us."

Cancer is a disease of adult life which destroys its victims at the peak of their productiveness, and when they are most essential to their families. Measures are needed to detect early signs.

A credulous, uneducated public is forever the dupe of quacks and charlatans. The specious promises held out by advertisers of sure cure remedies do not deceive a well informed people.

news writers and to state and local workers for distribution to the public.

State and city health departments are supplied with authoritative articles on cancer for publication in their bulletins and with suggestions for leaflets, posters, exhibits and statements to local newspapers.

Suggestions regarding educational methods and reports of work elsewhere accomplished are sent to medical societies and particularly to their committees on cancer and on public health education. Speakers are provided for professional meeting in the effort to assist in bringing the latest knowledge of malignant disease to the attention of the general practitioner through the regular channels.

Efforts are made to instruct nurses and social service workers with regard to the elementary facts about early cancer, so that they may be pre-

pared to advise people, especially women, with whom they may come in contact.

Lectures are given under the auspices of women's clubs, church and civic societies, and other organized groups and to employees of large industrial and commercial organizations. Speakers are suggested for public meetings in any state, city, or town.

Through a carefully supervised press service, the Society secures the publication from time to time of popular but reliable newspaper and magazine articles on this disease and the methods for its control.

In carrying out its design of organizing statistical investigations the Society has conferred with representatives of the leading American research institutes, hospitals, insurance companies and public health departments. The Committee on Statistics endeavors to secure the standardization of state and city reports and has initiated studies of the experience of life insurance companies and records of cases treated in general and special cancer hospitals and clinics.

The Society has urged improvements in the methods of collecting and publishing statistics of death from cancer throughout the United States registration area. At its suggestion the Director of the Census ordered the publication of a special report on the cancer mortality of 1914, which was published in 1916. This is probably the most detailed and comprehensive statistical report on this disease ever made by any government.

Early in the year 1920 an admirable set of sketches in color, drawn by R. Philipps Ward, an eminent New York illustrator, was prepared and taken to New Orleans for the annual meeting of the American Medical Association. This exhibit comprised fourteen panels and was designed to show, by simple pictures in serial form, the essentials of the cancer problem from the standpoint of the layman. One series of seven showed the right and usually successful way of treating cancer by going at once to a competent physician and fearlessly following his advice in getting rid of the malignant growth; while the other series showed the wrong and usually fatal method in which the patient, ignorant of his danger, by seeking treatment from an advertising "quack," loses his chance for a cure. The contrast between the competent doctor and fearless patient in the "success" and the careless doctor and indifferent patient in the "failure" is well

brought out by the artist, and the sequel showing the happy, intact family in one case and the widow striving to provide for her children in the other, brings forcibly to mind that cancer is a disease of adult life and destroys those at the peak of their productiveness and when most essential to their growing families.

There is an increasing demand for lantern slides for illustrating cancer lectures. The cancer exhibit has been photographed and made into colored slides and a special committee of the Society is now engaged in the preparation of several new sets, with accompanying outlines, for use by lecturers. These will include sets on the male and female genito-urinary system, cancer of the breast and a series showing the lymphatic drainage system of the body and those organs and structures most likely to be involved with metastases from cancer in various locations.

Arrangements are being made by representatives of the Society appointed by the President, to keep the subject of cancer control constantly before the profession as well as the public. Every state medical society in the country has been asked to provide at least one meeting each year on this subject for its members and also one public meeting, and the other national medical and surgical bodies as well as the various sections of the American Medical Association are being encouraged to make a feature of this subject in their annual programs.

Much is hoped for in the future by the extension of "cancer weeks" such as those held in New York

City, Denver and throughout the state of Ohio last year. Also from advisory, diagnostic and demonstration clinics such as those conducted in Scranton and Sayre, Pa., during what were known as "cancer days." Each of these efforts was a success, and whether such campaigns are limited to educational features designed to instruct the public by means of lectures and literature or whether they include the holding of clinics for the mutual benefit of the practising physician and his patient by providing expert consultation on the individual cases, such activities cannot but prove valuable in the general movement for the ultimate control of this disease.

Another venture to which the Society is looking forward is the preparation of a moving picture on the cancer problem. It is realized that the cinema is the most valuable single method in the whole educational armamentarium of quickly



"The nurse was quite right. Early treatment makes that hopeful. ~ ~ The lump must be removed."

It is the incipency of disease that needs to be sought for and recognized by the unfortunate victim if the annual toll of unnecessary deaths is to be reduced.

reaching a large number of people, with any message, and the Society now plans to avail itself of this modern means of mass education. A scenario has been prepared and it is anticipated that funds will soon be available for one or more films on this subject.

Heretofore the Society has functioned principally through other organized agencies, general and local, lay and professional, which might assist in carrying its message of cancer control to the public. During the past year, however, following the election to the presidency of Dr. Charles A. Powers of Denver, a widely known and extremely energetic surgeon, the Society has decided upon a more extensive organization scheme whereby every state in the Union will have its own committee and various local committees directed by prominent and interested members of the profession.

Under this thoroughgoing plan, conceived and carried out by the volunteer efforts of a group of the most representative physicians and surgeons of the country, the Society is assured of a most active and successful campaign in the immediate future and will shortly be prepared to inaugurate a movement for uniform effort in which the whole country may advance in unison in an educational attack on this disease.

### WHAT IS YOUR REACTION TIME?

**M**ETAPHYSICIANS and philosophers have long sought a satisfactory explanation of the psyche, without arriving at any close agreement in their theses. Physiologists, impatient with an explanation of mental phenomena on the basis of an integrating and ordering principle superimposed from the outside, have made it their task to prove that man is simply a reacting mech-

consciousness, and the approval or disapproval evinced by the "ego," which censorship is really a mental process of comparing the new experience with former experiences or habits found to be useful or socially acceptable. Behavior, then, becomes the crucial test of efficiency, and training must have as its object the extension of knowledge and the completest possible organization of such knowledge. A man's mind is the self-conscious counterpart of all his world.

The type of personality depends upon such organizations, and upon their availability, and tests of mental fitness must largely resolve themselves into the number and variety of possible reactions, and the time limit of response. New tests, therefore, have been evolved for a new generation. The picture shows an examination in Germany which is conducted twice a year to enable poor but intelligent children to attend higher grammar schools. They do not undergo the sort of examination which is usual in America, but are given a technical psycho-analytical test. Special machines enable the examiner to determine not only whether or not the subject has a steady hand, but also whether he or she is quick witted or energetic. The curves on an electrically operated dial give the subject's "index" clearly. Efforts are being made to extend this method of examination to trades in the interest of better placement, so that the boys and girls will be directed into occupations suited to them and in which they may reasonably be expected to succeed. The universal and intelligent application of some such method of estimating aptitudes would prevent the wasted effort in trying to put square pegs into round holes. S. P. M.

### PROGRAM OF HEALTH SERVICE

The building program of the United States Public Health Service calls for the construction of hospitals with a total capacity of 21,615 beds by the end of the next calendar year, according to *The Modern Hospital*. With the 9,045 beds now provided in hospitals owned or under lease to the Government, this will give the Public Health Service a total of 30,660 beds to care for discharged, disabled soldiers, sailors, marines, and war nurses.

The estimated cost for the construction and equipment of these hospitals is \$87,608,575. This estimate allows for a 10 per cent increase for the cost of building material, equipment and labor, over estimated cost.

The urgency of immediate construction is manifest in consideration of the fact that the Service, although operating only 9,045 beds in its own hospitals, is caring for more than 14,000 beneficiaries of the War Risk Insurance Bureau by contract arrangement with private hospitals and has a large number of applications from discharged soldiers for hospital care which it cannot meet because of the overcrowded conditions in private institutions. On this account, an urgent building program, involving the construction of hospitals with a total capacity of 8,830 beds, is being carried out, which will enable the Service to care for those men in its own institutions.

The two-year program calls for additional construction of 905 general beds, 5,530 tuberculosis beds, and 6,350 neuro-psychiatric beds. Thus, the total number of general beds to be constructed will be 2,605, at an estimated cost of \$8,466,250, exclusive of the cost of equipment, or of the 10 per cent increase covering the possible advance in the cost of building; the total number of tuberculosis beds will be 12,400, approximate cost, \$17,972,500, and the total of neuro-psychiatric beds, 11,060, estimated cost, \$22,225,000, exclusive of equipment or increase in construction cost.



(Chicago Tribune Foreign News Service)

New tests for a new generation. These children are being rated on their reaction time and other characteristics which enable their proper classification in work or study.

anism, and that mind evolves out of the continuity of recorded, recalled, and coordinated sense impressions which permit the experience of the past to constitute a guide in present crises.

The efficiency of the mind as an organ of adaptation depends upon the materials of memory, the continuity of



# THE MONTH IN MEDICINE

## A Survey of Current Medical Literature

SOLOMON STROUSE, M.D., *Editor*

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### ESSENTIALS IN MEDICAL EDUCATION

WITHOUT attempting to give a complete report of the Annual Congress on Medical Education, Licensure, Hospitals, and Public Health, certain outstanding lines of thought are worth noting and emphasizing. The discussion on medical education seemed to indicate considerable dissatisfaction with present methods and to show that efforts are being made to remedy present defects. A discussion of the so-called "pre-clinical" subjects indicated a rather unanimous feeling that it is necessary to effect a saving of time without cutting down on the hours required on fundamental preparatory subjects. Physiologists believe that more time should be devoted to physiology and that physiological studies could and should be undertaken by the student under the direction of the department of physiological research.

One difficulty which was emphasized by several speakers was the lack of men suitable to be trained in the so-called "pre-clinical" branches. Dr. Edmonds, pharmacologist, made a plea for closer team work between the pharmacologist and the clinician in the wards. Ewing also emphasized the necessity of getting more men studying and being trained, and he pointed out that greater inducements would be necessary to obtain sufficient men. Emerson laid particular stress on the necessity of a closer relationship between the laboratory work and the observations in the ward. It is not sufficient to let the student get a report—he should see the results of the laboratory tests; or better still, do them himself. After all, laboratory diagnosis is not a branch of medicine distinct from the ward work, but is a part of the effort to study the disease in the individual patient. Emerson also spoke on the present method of beginning pre-clinical work in the dispensary. He believes that the first training in clinical work should be in the wards of the hospital where

the individual case can be followed through, whereas, in the dispensary the situation is more like that of private practice. The study of the history of medicine would help a student in differentiating the results of scientific investigation and the prejudices and traditions which enter into medical teaching.

Sedgwick believes that more time should be given to pre-natal work, to the normal child, and to dietetics. In a discussion of the Emerson report, Ewing emphasized the importance of differentiating in the student's mind primary and secondary symptoms of disease. This seems to be a point of great importance, especially in some schools where the teaching of medicine seems to consist in an effort to incorporate as much knowledge of as many things as a student can possibly crowd into his brain.

The question of the general practitioner in contrast to the specialist as an object of medical training was discussed. It is highly important that the fundamentals of medicine be taught by men who are scientifically trained, for only in this way will the specialties be sufficiently indicated and interest stimulated for extending studies into the several special fields, and in the meantime for correlating the subjects so that at the proper junctures conferences will be sought with the specialists. Wilson made special emphasis of the necessity of developing characteristics in a student rather than imparting knowledge. The most important characteristics are thoroughness and honesty. It is better to go to the bottom of one subject than to cover many with less precision.

Cabot's long paper will not be discussed in detail. Mention should be made of his statement that it is important to encourage individuality in medical schools since there seems to be a tendency in certain sources to mould all medical teaching in the same form.

EDITOR.

## CONCERNING MINOR AILMENTS

BY I. A. GALDSTON, M.D., ASSISTANT DIRECTOR OF HEALTH COMMUNITY COUNCILS OF NEW YORK CITY

THE subject of minor ailments merits major consideration, this to amend somewhat for the long neglect to which it has been subject, and to emphasize its inherent importance and practical value. Nearly everyone is acquainted with the classic story of the boy and the dike. Few, however, realize how fittingly the moral of the story applies to the health of the individual. That a pinky-size break in the guarding Netherland walls might have led, if unattended, to the ultimate breakdown of the dike and to the destructive flooding of the plains which it guarded, is commonly well understood. That a similar overwhelming of the plains of good health by the waters of disease may take place through a break in the defensive powers of the body is not so well understood. Yet the principle in both instances is the same. So long as the walls of defense are intact there is a maximum of safety. Once there is a break, safety is lowered and, with no recreative activity counteracting and limiting the destructive process, the disintegration of the impaired organism advances along the lines of geometric progression. In simpler terms, as long as the health of a man is normal his defensive powers against all infectious diseases are sufficient to keep him normally healthy. Once, however, because of the neglect of some minor organic or functional ailment his health is less than normal, his defensive powers are lowered, broken, and an avenue of invasion is made clear for some destructive microorganism. The seriousness of the consequence, following such break, depends upon the type and extent of the microörganic invasion, its virulence, and upon the stand made by the "second line of defense," *i.e.*, the local and general organic reaction to the invading foe.

### Build Lines of Physical Defense

This thought of minor ailments and the individual's defensive powers demands emphasis, because, to the mind of the layman, minor ailments are minor matters, and certainly to some extent he is correct. But beyond their immediate importance there is the importance of what minor ailments may lead to, and this the layman sees not at all, or but dimly. Bad teeth in themselves—of what little import—he will say. But bad teeth with root abscesses and ever replenished pockets of pus draining into the blood with every heart beat seem less harmless. The first appear to threaten no more than some aches, some disfiguration, and possibly a fetid breath; the second, however, may lead to multiple neuritis, or inflammations of the nerves, to septic endocarditis, or heart diseases, to impaired eyesight, to pus kidney, and to any one of another hundred nameable and none too happy conditions.

Examine the average layman and he will readily see the first; the second and more important consequence—the complications—he cannot know specifically, and does not see generally. Yet, the complications liable to spring from so termed minor ailments, depending as they do upon an infinite number of contributing factors, and operating as they must under circumstances ever varying, are in themselves infinite in number. Any attempt to enumerate them would give near to the entire category of the known diseases in all their possible combinations. Further, no pathologic conclusion or picture incidental to such an enumeration might reasonably be deemed impossible since to medicine the most serious consequences have been

known to follow the least of injuries. Thus, anthrax or malignant pustule has followed a razor cut, and general septicemia has been known to result from a pin prick. Given any malcondition, provided it is associated with some break in the normal body defense, speculation as to consequence may have free rein with no fear of outstripping reality to check it. Such consequences, however, while possible, are fortunately not common and, though many a man lives for months on a 40 per cent basis of efficiency and strength, few of the pin pricks suffered result in more than the initial sting, and a most negligible percentage of razor cuts lead to anthrax infections. Most of the consequences are not so immediate nor so startling, though it should be added all are sufficiently serious.

In reviewing the subject of minor ailments one cannot but remark how readily the theme lends itself to a "calamity presentation." It is so easy to fall into the style of the nostrum advertisement wherein is paraded before the poor duped victim an array of the most distressing conditions that might result from the very ill which this bottled or boxed panacea promises to cure. It is tempting to present the unusual, the uncommon, the startling, the interesting. The more significant, the less sensational, somehow proves not so attractive. Yet in the study of the sequences of minor ailments, the truly important factors are not to be found nor to be perceived in the septicemia case following the pin prick, nor in the anthrax case, but, on the contrary, are to be found in the tables of life expectancy, in the indexes of death rates, and in the various other statistical data bearing upon the vitality of our people. For the minor ailments are not so dangerous in the immediate distress or fatality they may induce as because of the slow, certain, and insidious manner in which they sap the vital powers of the individual, robbing him of the reserve meant for old age and emergencies, and laying him bare to murderous assault by the many evil forces that operate about him.

### Vital Power Shown by Death Rates

As a matter, both independently interesting, and bearing directly upon the last point of contention, may be presented the fact that while through various health activities the hazards of life have been reduced to an extent resulting in the prolongation of the life of the average person of the ages from one to thirty-five years, the life expectancy for the average from thirty-nine and upward has been reduced to an equal extent, so that the man of forty today may not expect to live as long as his grandfather did. Incidentally, it may be worth noting that this is true for the United States only and that in Europe the death rate per thousand, which is another way of expressing the same factors, has been declining constantly and for all ages.

These facts, when stated, require examination and interpretation. Undertaking this, the very first question that presents itself is why do the mature men of today die younger than did those of grandfather's time. The answer very evidently is that modern life is more strenuous, and, while undoubtedly there is much truth in the answer as it presents itself, it demands further elaboration. Life today is more strenuous, that is, there is a greater tear and wear upon the living individual of today than there was fifty years ago. But certainly the mode of

life now current somewhat compensates for the increased tear and wear, or else the death rate were increased for all ages and not, as it is, increased but for those past middle life. Certainly, too, the assured constancy and superior quality of our food supply, the improved sanitation in the procurement, transmission, and disposition of milk, water, and garbage; the increase in number and the improvement in operation of our hospitals; the development and extension of our boards of health—all must contribute to the improvement and prolongation of life, all of which should, and to a certain extent does become evident in a lowering of the death rate. Yet, to repeat, despite these various factors tending to improve the conditions of existence and, therefore, to lengthen life, men and women in the late mature years have less of life to expect today than formerly.

### Nature Penalizes Neglect

The first answers being thus proved incompetent, it but remains to probe the problem further, and a solution suggests itself through the expression "the tear and wear of modern life." That it is so is granted. The life of today is more intense, in the common vernacular is "of greater speed." But increased speed brings with itself the need for increased and improved care in the operation of the human machine. Possibly it is in the lack of this care, in the neglect of minor ailments, that the cause of the mentioned increased death rate is to be found. There is hardly another solution to the problem in hand that suggests its completeness and validity so forcefully and so convincingly as the last. Certainly, if we understand minor ailments in the broadest sense possible, this suggested solution becomes absolutely convincing.

The significance of this last point might perhaps be made clearer through a quotation taken from the late Dr. Osler's masterful dissertation on tuberculosis. This master clinician's view of the body as a soil wherein the seeds of diseases become implanted and flourish in the degree of its susceptibility and fertility can happily be as well applied to minor ailments as to the specific affection tuberculosis, and it is quoted here for this very reason. The passage reads:

Many years ago I drew the parallel between infection in tuberculosis and the parable of the sower, which, though now hackneyed, illustrates in an effective way the importance of the nature of the ground upon which the seed falls. "Some seeds fell by the wayside and the fowls of the air came and devoured them up." These are the bacilli scattered broadcast outside the body, an immense majority of which die. "Some fell upon stony places." These are the bacilli that find lodgment in many of us, perhaps with the production of a small focus, but nothing comes of it; they wither away "because they have no root." "Some fell among thorns, and the thorns sprang up and choked them." This represents the cases of tuberculosis, latent and active, in which the seed finds the soil suitable and grows, but the conditions are not favorable, as the thorns, representing the protecting forces of the body, get the better in the struggle. "But others fell on good ground and sprang up and bore fruit an hundredfold." These soils wherein infections spring up and bear fruit are the soils made fertile for destruction through the neglect of the common laws of health and through the slow but certain lowering of the organic vitality and natural defensive powers through the operation of neglected minor ailments. Observance of the first and attention to the second would make us all "stony places whereat no seeds of diseases can take root."

To the mind of the average man busy in the pursuit of individual interests, and not commonly given to thinking in social figures, the facts enumerated may present no special significance. It is so far from a deflected septum or an infected tonsil to a life expectancy table that the mind and imagination of the untrained mortal is lost

in the stretch. But relations exist, perceived or unperceived, and these cold tables of death rates and life expectancies are staggering in the seriousness of their revelations. For the interest of our greater community it becomes essential that we develop a social vision competent of a correct perspective and embrace of social matters. It is important too that this social vision dwell on health, and learn to see the very grave and serious relations existing between the untended minor ailments and the vital status of our people. McBride<sup>1</sup> in his presidential address before the American Neurologic Association, held in Atlantic City in 1919, speaking on the social loss from diseases pointed out that:

"The annual social loss from disease is equal to the destruction of a great war. This is all the more to be regretted because most of it is preventable. It is a serious thing that there are more than six hundred thousand deaths from preventable diseases in this country every year. Four hundred times the number that were lost on the Titanic, a tragedy that shocked the world. Three hundred thousand babies die before they are a year old, a loss of which the figures are a poor measure. More people die before they are fifty years old in the United States now than in the time of our grandfathers, though in several European countries more people live beyond the fiftieth year than was the case two generations ago."

These facts and figures tell but the merest bits of a most discouraging tale. To them should be added the economic losses due to inefficient work, the many millions of days lost in preventable sicknesses, the untold of suffering springing from the vicious circles of poverty, illness, and worse poverty and much else. But the tale told and the causes enumerated, what then? Then comes the melioration. Stirred to action by the knowledge of all sequents of the violation of the common laws of healthful living and the neglect of minor ailments, it is for the conscious elements of our communities to direct its activities to the elimination of the causes and the simpler factors behind these.

### How Health Habits Are Evolved

First should come education, education in the laws of proper living; education which will begin in the public school and be extended throughout the individual's school life till he is, at least, as well acquainted with the geography of his own being and its physiology as he is acquainted with the geography of the United States or the correct analysis of a sentence. Though it is not possible to suggest these lines of activity in any form of graded importance, perhaps the second emphasis should be placed upon a systematic agitation and education for periodic physical examination. It is the philosophy of the ostrich, ill becoming to man, that "what I see not or know not of isn't going to affect me." Yet many a man refuses to visit his dentist and his doctor for fear that the first may find a cavity to fill or a tooth to extract, while the second might order a life extending vacation which would interfere with business. It has been the experience of physicians examining insurance applicants that many a man first learns of his weakened heart or impaired kidneys, or hardened arteries when rejected by the insurance companies, men who might have been saved such serious consequences by a timely examination which would have led to a modification of their mode of living.

This most culpable neglect of the human machine by man himself stands out more glaring and consternates the mind of the physician and health worker the more when in contrast to this neglect of self we note the care he bestows upon the common machines he employs in his daily life.

1. McBride, James H., M.D.: *The Physician and Human Conservation*, MODERN MEDICINE, October, 1919, p. 528.

What motorist but yearly overhauls his motor car. What housewife but properly cleans and oils and examines her sewing machine. Universally, each spring and fall sees extensive housecleaning. Here the furnace is examined, there the plumbing, in a third place the roof, in another the woodwork, and everywhere damages are repaired and things mended. It is the human machine, most previous of all, that is so universally neglected. How very human!

To create the demand, however, is but half the task; to supply it is the other, and with the agitation and education for periodic physical examination there should be developed the agencies through which such physical examinations may be had, minus the pecuniary embarrassment that would be suffered if practised under present conditions. A complete physical examination requires the services of several experts whose services requires the use of costly equipments, and whose combined fees under the present status of medical practice are far too burdensome for the average income. The high cost of expert service is, however, as much due to the relative infrequency with which it is required as to its very expertness, and with the creation of a greater demand the sum total return for services would be increased, while the relative costs would decrease. If such agencies were organized as part of the greater public health machine, it would readily become possible for the average person to secure all the requisite expert services required in a thorough physical examination without undue financial strain.

### Health Through Community Effort

The development of these agencies are not to be looked for as spontaneous social developments independent of directed community efforts, and, since such efforts can come only after an understanding of all factors involved, the matter again resolves itself, like a correct mathematical proposition, to the original answer—education. Education, or the knowledge of matters and methods, will make the average man recognize the importance of minor ailments and the true wisdom of a stitch in time, and will bring into being the community movement for the creation of the required social agencies of health. Education will also prove the effective solution for all associated problems.

As stated in the Memorandum on Malnutrition,<sup>2</sup> "the socialization of knowledge is the first ingredient of a true panacea—the other ingredient is a conscious and intelligent pursuit of the ends so pointed out. To the three R's—without the possession of which no man may be deemed even rudimentally educated—should be added the fourth R, standing for the Rules of Health, and the last should be as firmly insisted upon as the first. The community councils here may prove efficient instruments. Not only can they serve immediately as educative agents conducting open forums for the instruction of their mature members, but also they can bring pressure to bear upon the proper sources, with an aim toward modifying the curriculum to include a more extensive study of hygiene than is given at present.

Education, however, covers a multitude of sins and by its vagueness brings despair to the hearts of those who seek a concrete something in the fog of Social Activities. But it really need not do so, for, if it has been vague in the past, it may be given specific meaning at present.

We have already defined education as a knowledge of matters and methods, and our educative activities should serve to acquaint people with these. The matters should dwell on the people's proper sphere and the sphere's problems—the methods—should be directed toward the improvement of the first and the solution of the second. The

instruments for the teaching of both are to be found in our existing educational institutions, and can be made to serve through proper application. The public forum ranks high in effectiveness as an educational instrument; the lecture platform, the public schools, and the public press can prove equally efficient under different circumstances. The existing public health organizations can also be made more effective in their labors by being brought closer to the people, this implying no more than a greatly broadened acquaintance on the part of the people with the activities and aims of the health institutions.

This memorandum which begins with minor ailments now ends with education. As is maintained throughout these pages, the two are intimately associated, the first as the problem, the second as the solution; the first as a *particular* problem, the second as a *universal* solution. And the councils, in the opinion of the author, achieve only where they educate, where they teach thought and action. Each community, of course, has its individual problems which require individual treatment. It is hoped, however, that this general statement may serve as a guide to the proper understanding and efficient solution of these particular problems.

### SAFETY IN CONSERVATION OF VISION

It is a fortunate fact that when factory lighting is made very good, it ceases to be merely an expense and advances into the class with income producing investments, according to John A. Hoebler, of the Industrial Commission of Wisconsin, in *Safety*. Because of the importance of good lighting in reducing accidents, conserving eyesight, and increasing production, the illumination of a plant is worthy of as much attention as machines and tools. When natural light fails, there must be provided a substitute equal to daylight in enabling the eye to see, if the shop is to produce on the scale of daylight efficiency. The following tests are suggested by Mr. Hoebler to determine the efficiency of artificial light: (1) Is the illumination received at each working position sufficient for the particular operation? Any shop man can be the judge of this, even though he cannot design the lighting installation; (2) Is it possible to look from one end of the shop to the other without straining the eyes, or do numerous exposed or partly exposed lamps interfere with comfortable vision? If such a view may be taken without straining the eyes, the chances are good that the man at the machine will not be hindered by glare, by which is meant "any brightness within the field of vision of such a character as to cause discomfort, annoyance, interference with vision, or eye fatigue." In cases where the work is on polished surfaces additional protection must be provided so as to eliminate bright reflections in these surfaces; (3) Is it possible to work without causing unavoidable sharp shadows on the work? If these three requirements are satisfied, then the main items that go to make up an adequate artificial lighting system are present and one may be assured of good results.

On women we must depend, first and last, for personal and household health—for preventing the family from degenerating in as far as these things are concerned. Would not the true way of teaching the art of preserving its own health to the human race be to teach the female part of it in schools and hospitals, both by practical teaching and by simple experiments?—Florence Nightingale.

2. Goldston, I. A., M.D.: Memorandum on Malnutrition, MODERN MEDICINE, September, 1920.

# HEALTH IN INDUSTRY

## Hygiene, Sanitation, Medical and Hospital Service in Relation to Industry

Official Organ of the American Association of Industrial  
Physicians and Surgeons

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### INDUSTRIAL HYGIENE IN GREAT BRITAIN

ALTHOUGH in the teaching and practice of industrial hygiene Great Britain has a good deal to learn from America, yet signs are not lacking that employers of labor and factory proprietors are beginning to become awake to the fact that it pays to have workshops of every description in a good state of hygiene in every particular. If workers are not well or are discontented—a symptom of mental sickness—the work is not done as it should be and the employer suffers the most in the long run. The laws regulating factories and workshops here are, in the main, excellent, and, on the whole, efficiently carried out. They are uniform throughout the entire country and an industrial revolution of a happy kind is in progress.

In dangerous and unhealthy trades perhaps the greatest factor in improving conditions has been the introduction of artificial ventilation, with the enlargement of shops in proportion to the numbers employed. The war has given great impetus to scientific research, and has done much to help in the hygienic improvement of the condition of industrial workers by the discovery of harmless substitutes for poisonous ingredients and the rapidity with which the new affections introduced during the war by the handling of T. N. T. and aeroplane dopes were dealt with is testimony to advance in methods of caring for the workers' health. Of course, at one time the sanitary and hygienic conditions of the factories and workshops of Great Britain were deplorable, not to say scandalous. Child labor, which was then usual, has been abolished altogether, in which respect this country leads America. Long hours of work have been reduced enormously, the most exhausting forms of labor have been minimized or abolished by the introduction of mechanical appliances.

However, there is still a vast difference in the manner in which factories are conducted, and it is to the credit of the big concerns, that, as a rule, they acknowledge their responsibilities to their work people by keeping their houses in order from the sanitary and hygienic standpoint. Where America is in the van, is in the hygienic and esthetic management of factories and workshops. Their laws as to sanitation, generally speaking, are not so good as in Great Britain, because they vary in the

several states. In some of the states the laws in this direction could scarcely be bettered; in other states they are lax in this respect; but the American employer is more solicitous of the welfare of his workers than the British employer. Yet there are now many British employers who look after the health and well being of their employees most conscientiously.

Neville Chamberlain, M.P., president of the Section of Industrial Hygiene at the Sanitary and Hygiene Congress held in Birmingham in the autumn of 1920, in the presidential address described work being done by a Birmingham firm for its employees in the way of industrial hygiene. The medical service of the firm comprises a central and four branch surgeries; a wheeled ambulance is kept at each branch and a motor ambulance at the main surgery. Trained nurses are in constant attendance and a visiting doctor attends each day at a quarter past two for as long as required. There is no charge for treatment; his salary is paid by the firm. A dental surgery is run in connection with the main surgery and advice is given free; treatment may be obtained and paid for by deduction from wages if desired. For recreation, a clubhouse and grounds comprising thirty acres have been provided. The clubhouse contains accommodation for holding committee meetings, debates and lectures. There are a billiard and chess room, library, tea rooms and separate common rooms for girls and men. If a member wishes to give a family party, a room may be reserved for the occasion. A subscription of five shillings (\$1.25) is charged. The playing fields and tennis grounds are provided with pavilions in which light refreshments can be obtained and dances held.

The factory is constructed so as to provide every facility for air and light. The maximum of light is obtained by constructing the windows so that they reach to the ceiling and only a very narrow tier of brick separates them. By the arrangement it is very unusual to have to use artificial light, in the day time, but a special study has been made of the placing of lamps, with a view to securing perfect illumination, continuous artificial ventilation by dust exhaustion and fans insures the removal of swarf, small pieces of metal and other substances likely to cause dust. Landings and staircases are cleaned daily. From 12 o'clock on Saturday night until Monday morning all windows are opened and all floors thoroughly cleansed.

Lavatories with hot and cold water, soap, nail brushes, and towels are provided, the latter supplemented if workers desire, and services of drinking water are laid on. There is a gymnasium with shower baths for boys and girls, for which no charge is made. While progress has been made, industrial hygiene is yet rather a collection of experiments than an organized science, and the path to future progress lies more in prevention than cure. It is the human machine which must be studied and attended to, and the human machine differs in essential respects from the mechanical machine. The source of human energy is mental, and must be kept in the highest state of efficiency. It is not sufficient to protect the worker from disease, to have a perfect sanitary and hygienic equipment, or even to place at the disposal of all the resources of medicine and surgery. His mental powers, their strength and limitations, must be considered, and this statement is even more true of woman than of man on account of what Sir Almroth Wright has termed her physiological disabilities. More accidents occur through mental than physical fatigue, and the question of industrial hygiene must be regarded from the psychological as well as the physiological point of view. Monotonous labor

dulls the mental powers, and rest and amusement are indicated in order that labor may yield of its best. The cheerful worker is a zestful and good worker, but he cannot be cheerful if the monotony of the work bores him. In the recently introduced Ministry of Mines Bill it is proposed to establish a fund provided by a statutory levy of one penny (2 cents) per one ton on the industry for the special behoof and for the recreation of the miners.

LONDON CORRESPONDENT.

### CZECHS COMPEL TREATMENT

The Division of Social Pathology in the Ministry of Public Health of Czecho-Slovakia is advocating the passage of a bill in parliament which provides for compulsory treatment of the infective stages of venereal diseases and requires every city of more than twenty thousand inhabitants to provide a dispensary for the free treatment of venereal patients. Advertising of cures and quackery will be prohibited, and physicians will have the right to report all patients who do not apply for treatment regularly during the infective stage of the disease.

## THE PHYSICAL EXAMINATION OF EMPLOYEES\*

By A. W. COLCORD, M.D., MEDICAL DIRECTOR, CARNEGIE STEEL COMPANY, CLAIRTON, PA.

WHEN I was a young man, many years ago, I was greatly impressed by a lecture I heard at a teacher's institute, entitled "Pedagogus Cui Bono." "The Teacher—For Whose Benefit?" If we could paraphrase this we would have a more appropriate name for this contribution—"The Company Doctor—In the Rôle of Physical Examiner—For Whose Benefit?" When the great steel strike was called one year ago, the unions made twelve demands, and one was—the abolishment of physical examinations. This is an indictment on the face of it, and there must be something radically wrong with our whole system of physical examinations or the workers would not only be satisfied with them but would demand their continuance.

### Where Our Opportunity Lies

Why have we failed to convince labor that these examinations are mainly for the benefit of the employee? Have we undertaken this job in just the right spirit? Have we grasped the opportunity? Have we let the "protect the company" idea cloud our vision and shut out the broader, better view? Here is our chance to help the man become healthier, happier, more efficient, to live longer; our chance to make him feel our personal interest in him; to start him on the way to become a loyal contented member of the great big family that runs our plant. Are we letting this chance slip? Someone has said, "we examine the new man to keep out the unfit and fit the fit." This is all right as far as it goes. It is well to select the men who are adapted to our needs and to find just what job each can do best; but this is not enough. We must not only fit the fit, but must make the fit fitter—and we can often make the unfit fit.

There are times when the industrial surgeon can serve his company best by not serving it. Whether on the witness stand, in the emergency hospital, or in the examina-

tion room, the surgeon is not an advocate for the company, but a just judge—an apostle of the "square deal," and if he must lean, let it be toward the employee. If nine days are lost each year from sickness by each worker, and if, as we are told, one-half of this sickness is preventable, we must first find out the causes of preventable sickness, and then set about preventing it. We may do this along four lines: (1) Better working conditions in the mill; (2) better living conditions in the home; (3) finding out and arresting disease in its early beginning; and (4) adjustment of the man's life to suit his physical condition.

So much has been said about care of the eyes and teeth, and about tuberculosis that they are mentioned only to emphasize their importance.

There are especially two fields where more work needs to be done and where our minds remain somewhat unsettled. One is the hernia question<sup>1</sup> and the other is the heart. Our profession is just waking up to the importance of heart disease; to the fact that it is one of the greatest three causes of mortality; that it often disables the victim for years and, most important of all to the industrial physician, that, if caught in time, it may be cured or arrested. We owe much to Sir James Mackenzie for teaching us the relative unimportance of heart murmurs; that it is function, after all, that counts, and that we may detect these signs of heart failure early—while the heart is still efficient—and so regulate the patient's life that he may have many years of usefulness.

### Vagaries in Examinations

Before the passage of compensation laws, examination of employees was unusual among the great industries. About six years ago the Carnegie Steel Company instituted the routine examination of men, gradually extending the practice into its various plants. Since that time we have at the Clairton plant examined about twenty-five thousand men.

\*Read before the Joint Meeting of the American Association of Industrial Physicians and Surgeons with the Health Service of the National Safety Council, September 29, 1920, Milwaukee, Wis.

1. Colcord, A. W.: Hernia: Should It Be Classed as a Compensable Injury or a Disease?, *Pennsylvania Med. Jour.*, August, 1918.



As more than twenty-seven states now have compensation laws, the employers of labor have felt that their own protection called for some form of examination. These examinations differed according to the needs of the particular industry, but more often varied with the ideas and hobby of the medical director of the company, some employing the most cursory inspection without stripping, others requiring a two hour examination and going over each case with great thoroughness. Some examiners place the greatest emphasis on eyes and ears; some are strong for tonsils; some think the teeth the main thing; while others concentrate their energies on looking for and trying to cure tuberculosis. Then we have the hernia enthusiast, the man who looks especially at the feet for fallen arches both major and minor, ballux valgus, etc.; the heart specialist; the man with tobacco and alcohol phobia; the expert who would measure the man's mentality with a Binet test or his physical endurance with a muscle testing machine; the genito-urinary man who puts his applicant through the third degree as to gonorrhea or syphilis; and the laboratory man who would find out the most necessary things by making blood counts, urinalysis, Wassermann, and blood pressures. These are not mentioned to the disparagement of any one of them, but only to show to what lengths a hobby may carry a man. Out of all this we should select what is necessary and best.

In our physical examinations we must not lose our sense of perspective—must not exaggerate one feature or minimize another.

There is good in each one of these hobbies, but we must not ride it too hard.

I believe, aside from the clerical work, a fair idea of each man can be obtained in an average of ten minutes.

Some such routine as the following is useful:

(1) Height and weight, obtained by a clerk outside.  
(2) Applicant comes into examining room *stripped and alone*.

(3) Examiner makes rapid, systematic inspection—noting his gait, carriage, appearance of skin, muscles, joints, any scars, deformities, limp, or stoop. One learns to unconsciously note his apparent age, mentality, nutrition, signs of dissipation or ill health, signs of physical training, as of a soldier or athlete. To the trained examiner all this and much more is apparent in the few seconds elapsing while the man enters and walks up to the examiner. It is well to follow some definite outline in this inspection at first, till it becomes a habit, such as beginning at the top of the head and going downward, to include hair, eyes, face, neck, shoulders, arms, hands, chest, abdomen, genitalia, thighs, knees, legs, ankles, feet, toes.

(4) Greet the applicant cheerfully and in a way adapted to his personality. This cannot be taught, but is one of the most important things in the examination. Many applicants are nervous, some are frightened, and some ugly at having to submit to an examination. Some are inclined to be over-familiar with the examiner. The greeting must be such as to quiet the nervous, allay the fears of the frightened, win over the grouchy one, and command the respect of the over-bold and familiar. Above

all, this first greeting must win his confidence and make him feel that the physician is his *friend*. When this is accomplished, we have won the battle, and he will tell anything we wish to know, will willingly submit to anything we may find it necessary to do in our examination, and he will help and not hinder the process.

(5) Having made the preliminary inspection and placed him at his ease, he may now be placed on the examining table so as to go over him more closely again, beginning at the top of the head and going downward. In my own work I prefer to do this with the applicant standing.

The eyelids are everted and examined for trachoma or other disease. The cornea is inspected for scars or ulcers, the pupils are noted for inequality, irregularity, or immobility.

The teeth, mouth and throat are then inspected. It seems unnecessary to make a record of each tooth, but a general record may be made of the conditions of teeth, tonsils, etc.

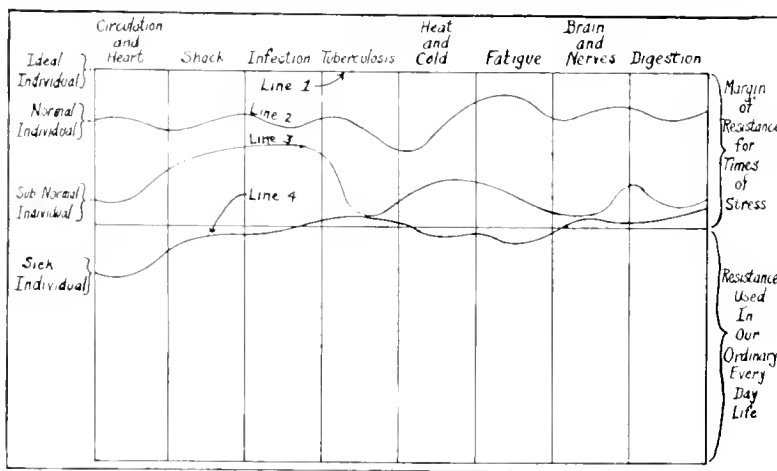
After noting the condition of ears, neck, cervical glands, thyroids, etc., proceed to the shoulders, arms, and hands, noting especially signs of previous injury, stiff joints, or old fractures. Then pass to the chest and with a stetho-

scope, or the ear and a towel, and rapidly listen to heart and lungs.

The first inspection will usually indicate which points to emphasize in each case and whether a thorough chest examination is needed. Note chest development, deformity, or asymmetry, getting a history from patient of empyema scars, area of dullness or flatness, protracted coughs, pneumonia, or pleurisy.

We then pass to the abdomen, palpating spleen, liver and appendix. The hernial regions are gone over, as the patient coughs, first inspecting, then palpating the rings, and lastly invaginating the scrotal skin over the little finger into the external ring. I have classified open hernial rings into three degrees, according to whether patulous or lax. A normal ring admits the little finger with difficulty. An open ring of first degree admits the little finger easily, but has a firm border to the ring and shows little or no bulging on coughing. An open ring of the third degree has widely open ring, admitting middle finger or thumb, with distensible border—open canal—usually with a weak aponeurosis on posterior wall of canal. If the inner ring can be felt and will admit the finger, there is probably a hernia, although it may not be possible to get it out on coughing or lifting. We note the condition of the whole hernial region, observing any weakness of muscles and any signs of operation or truss-wearing. An enlarged gland, an undescended testicle, or a varicose vein over inguinal canal is not to be taken for hernia. The condition of the spermatic veins and evidence of bubo or its scars, varicocele, hydrocele or scar tissue from old orchitis or epididymitis call for closer observation. Acute gonorrhea, chancre, or chancroid will, of course, be in evidence if present.

The thighs, legs and feet then come in for attention,



No two men show the same physical characteristics, but their resistance may be estimated by a balance struck between weaknesses and points of especial strength, not overlooking the personal equation of intelligence, adaptability, and the will to win.

noting stiffness of joints, scars, deformities, varicose veins, edema, ulcers, flat feet, hallux valgus, etc., at the same time noting the presence or absence of skin eruption or scars of operations or wounds.

The examination of an applicant becomes, with long practice, much like the reading of a page of proof by an experienced proofreader—he goes rapidly over a whole page and sees very little unless some such error as a misspelled word, a letter upside down, or an omitted capital, stands out from the page and instantly arrests his attention.

With long practice, the going over in this way of a large number of men can be reduced to an average of about ten minutes for each man. The healthy man with nothing to note will require about six minutes, while here and there a bad case will require fifteen or twenty minutes.

To test the eyes and ears will require two or three minutes to be added to the average time. In railroad employees the color test will require one or two minutes more.

### A Summation of Findings

Having completed his examination and written on the card all important points, there remain to be considered:

(1) The grading as entered on the card: I usually have in mind a marking on the scale of one hundred. Loss of a finger counts five; great toe five; twenty one-hundredths vision in one eye five; a stiff elbow in one arm otherwise strong ten; loss of two fingers ten; a deformity of leg or hip causing a marked limp ten; deafness in one ear five to ten; partial deafness in both ears five to ten; stupidity five to ten; stuttering or stammering five to ten; hollow chest, stooping shoulders, poor nutrition, bad teeth, sallow complexion, heart lesions, old lung areas of consolidation, all having a value according to their gravity and especially in their bearing on his usefulness as a worker. Having his percentages in mind, the rest is easy: From 90 to 100, A; from 80 to 90, B; and below 80, C. The "C" man is employed only after conference with the chief employment officer. Complete loss of one eye or one leg or a hernia, grades to eighty or below and makes a man a "C." Whether to employ such a man with our present compensation laws is a debatable point. Many companies do employ them and place them in selected positions. Active venereal disease or other contagious or infectious disease should temporarily reject a man. An exception should be made for scabies or pediculi if the man takes measures at once to rid himself of them. Trachoma should reject while active and showing pus in the eye. We have allowed cases of trachoma to work after the acute stage had passed, provided the man used his own basin, soap, and towel, and kept himself under the treatment of a competent man till pronounced cured.

(2) Estimation of resistance: In the evolution of a race, whether of plants or animals, resistance is most developed along lines of the strongest attack. An oak is an oak because the winds have blown it, the winter has frozen it, the summer suns have scorched it, and the drouth has tried to dry it up—it and its ancestors—for thousands of generations. "We are what we are because we have been doing what we have been doing." At those points in our wall of resistance where we have been subjected to the greatest stress, we have developed a special resistance. Our bodies have built up through the ages a mechanism for withstanding fatigue, shock, various poisons, the different infections such as tuberculosis or erysipelas, hemorrhage, hunger, heat, cold, heart strain, mental strain, dust, thirst, loss of sleep, deprivation from oxygen or sunlight. From the cradle to the grave our life is a constant struggle for existence. Beset with foes without and within, we gather strength by the fight we make. We slowly learn to adapt ourselves to our surroundings, to the life we must live, to the things we must do.

Health is an adjustment of the body to its environment. Each organ has this power of adjustment within certain limits. When this limit is exceeded, injury and disease result. The heart adjusts itself to running, walking, sitting or lying, the blood pressure adjusts itself to the

various conditions, rising in cerebral compression, arteriosclerosis or uremia, and falling during sleep or shock. If continued strain is put on the heart its walls enlarge and thicken. If intra-abdominal pressure increases over a considerable period of time the muscular walls become thicker and stronger. This is especially true in manual laborers and it is this compensatory strengthening of abdominal walls that usually prevents the laborer from getting hernia more frequently than the clerk.

If we were to represent these lines of resistance graphically, the straight line at the top would represent a perfect individual existing only in our imagination, the "Wonderful One Hoss Shay" of Oliver Wendell Holmes. In the normal individual the line comes well up at all points, showing a good margin of resistance everywhere. The subnormal line is that of a man whose resistance is low at one or more points, coming down near the danger line. He cannot stand stress at these points. The lowest line represents a sick man. He has not enough resistance to lead even an everyday life, and he must be turned over to someone competent to treat him until his wall is built up at this point.

It is the business of the examining physician to locate the top line of the man's resistance; to find where he is strong and where he is weak; what he can stand and wherein lies his danger. He must estimate the man mentally and physically—his aptitude to fill a responsible position—his endurance—his ability to keep himself or others from danger, and his resistance to disease or exposure.

(3) Personal conference with the man as to his condition, his care of his person and of his health. He will, if we have used tact up to this time, tell us freely of such of his past history as we need to know, including his habits and way of living—good or bad. We now tell him as much of our findings as we think is good for him to know—show him what bearings these may have on his future health, happiness or longevity—and direct him what to do, or where to go to have his teeth fixed, his eyes corrected, his hernia operated, his scabies cured, or any one of the many correctible things we may have found. This personal interview is the psychological moment of the whole examination—the time when we can do much good or harm; we may miss a splendid opportunity to follow up our advantage we have already gained in winning his confidence and respect—by not telling him the things he ought to know. There is no time when we can impress the excessive smoker of cigarettes of his danger as when we have just examined his heart. The man who is intemperate in eating, drinking, or working can be warned of his danger.

If in this examination we have failed to break down opposition, clear the prejudice out of his mind that may have existed against physical examinations, show him that we take a personal interest in him, that we are his friend and are anxious to do him good—if we fail in this, then the examination can be considered hardly worth while and we have wasted out time and energy and the company's money.

### Health Supervision Follows

Those cases examined who have remediable deformity, curable disease, or ways of living that may injure their health should be seen at regular intervals, to make sure that they are profiting by our advice. How much pressure should be brought to bear on them to compel their following this advice will depend on the policy of the employing company, and to a certain extent on each individual case and its needs. Certainly there should be some follow-up system, systematically carried out, and every effort should be made to bring every employee up to the highest point of health and efficiency. I have said to a man with a serious error of refraction still uncorrected: "You will be employed with the understanding that you will report to me in ten days with properly fitting glasses." If such a man is not financially able to do this, he should receive the necessary aid.

The rooms for examination may be a part of the plant hospital or may be connected with the employment offices. We have the latter arrangement at the Clairton plant.

The waiting room is used in common with the Employment Bureau. From there the man passes into a dressing room with individual booths. When stripped, he walks into the examination room, which is a room 10x26 feet, with three windows on one side. It is also well lighted by electric lights. The furniture consists of stationary wash basin, desk, swivel chair, two still chairs, and a small high desk for surgeon to write on while making examinations. A rug is on the floor, covered with a square of heavy duck, to be changed frequently. A surgical table is placed at one end of the room, on which the applicant lies during the greater part of the examination.

At the other end of the room are test charts for eyes.

The surgeon should be provided with the usual instruments for examination: scales, for measuring and weighing; stethoscope; blood pressure instrument; urinalysis set; microscope and accessories; tape measure; ruler; ophthalmoscope; nose and ear specula; tongue blades; and head mirror. In cases where some special examination is needed, such as x-ray, blood count, or Wassermann, there should be some arrangement by which this can be done in a nearby hospital or laboratory.

The floor of the dressing room should be covered with some material which can be cleaned daily. There should be a shower bath and toilet connected with dressing room or within easy access.

The above described arrangement is suitable for one examiner only. If there are specialists to examine each man, or even an occasional man, suitable offices should be provided.

All rooms used in examinations should be specially well ventilated, not only for the health of those in attendance but because the air soon becomes very offensive, if not frequently changed.

One or more policemen should be in attendance to guide the men as they enter and leave the examination room.

Some doctors prefer to have a clerk present to record the findings. I am aware that this is a great saving of time and relieves the doctor of much work, but it destroys the privacy of the examination and robs it of the close personal relation between doctor and applicant. For this reason, I prefer to do my own clerical work during the examination. One hears much discussion about where, how and by whom examination cards shall be filed. Certainly there should be some system used making them easy of access. In my opinion they may be filed by an employment clerk and attached to the employment card—filing by check number, with a cross index by name. When needed by the doctor, he has only to ask the employment clerk for the man's card. We then have the man's whole employment and examination history before us, and in case of re-employment, the same examination card and employment card can be used, with such additional entries as are needed.

### The Foreign Laborer

I am aware that the difficulties in examining foreigners who can speak no English are almost insurmountable; yet in actual practice—after we learn how—the difficulties are more apparent than real. After handling large numbers of the various nationalities, one learns to a certain extent how they think and what manner of approach is best suited to them and will best win their confidence.

I seldom use an interpreter and would much prefer to have the man *alone* though I could not speak a word of his language. Of course an interpreter must be used by the employment office.

In the physical examination of female employees I have had no experience, and would very much like to hear this

phase of the subject discussed by someone who has done this work.

I only know that it is being done in some plants with great benefit to all concerned. It would seem almost necessary where women and girls are employed in considerable numbers that they be under the care and guidance of a skillful, tactful, sympathetic woman physician. Those interested in this phase of the work will be repaid by a visit to the plant of the B. F. Goodrich Company at Akron, O.

The applicants for employment, on examination, fall naturally into three groups:

(1) Normals: These will need examinations at regular intervals to make sure they are still normals.

(2) Subnormals: These need—(A) Adjustment of the man to his environment—habits—treatment. (B) Adjustment of the environment to the man. Selection of department, cooperation of superintendent or foreman as to kind and quantity of work he should do. (C) Correction or regulation of his home life. (D) A keeping in touch by frequent re-examination and conferences to see whether he is placed right. How he stands his work—whether he is taking our advice.

(3) The sick: Those who do not have the strength and endurance for even the lightest work or the routine of everyday life. If their case is hopeless, we must return them to their friends and tell them kindly of the fact. If their sickness is curable, we should refer them to the proper place—family doctor, their friends or, if they have no family, friends or means, we should send them to a hospital and assure them that as soon as well and able to work we have a place for them. Those who have contagious diseases, whether active venereal or otherwise, must be sent away until they are not a source of danger to fellow workmen.

### Causes for Rejection

This leaves few real rejections: (1) Those whom state compensation laws would penalize us for hiring. Such laws are inhuman and all such portions of the law should be repealed; (2) those hopelessly sick; and (3) those who by mental or physical unfitness would be a source of danger to fellow workmen.

In installing a system of physical examinations in a plant, I would suggest that we should provide for the following:

- (1) Complete examination of all now employed.
- (2) Examination of all applicants.
- (3) Re-examination of all who leave the service of the company, one month or longer, and return.
- (4) Re-examination of all employees at stated intervals.
- (5) Special examination of an employee who has just passed through a severe sickness or has had a serious injury. Also a man who shows in his work that his health is failing or that he is losing his efficiency.

### Special Examinations

In times of epidemic of contagious disease it may be necessary to make daily examination of all contacts. We have done this during several smallpox epidemics, allowing contacts to work in a crew by themselves, out of doors, and having a doctor or nurse inspect each man daily, including temperature.

During the great influenza epidemic of 1918 we had 1,000 men in our bunk houses. The influenza hospital was equipped early with two graduate nurses in charge and each bunk house was inspected daily by an officer. Every suspicious case was at once examined by doctors or nurse and, if flu was suspected, he was taken to the flu hospital and isolated. When the cases were convalescent, they were kept several days in a convalescent hospital before being allowed to return to the bunk house. Although from 30 to 60 per cent of the inhabitants of surrounding towns had flu during this epidemic, only seventy cases, or 7 per cent, developed in our bunk houses.

In addition to the routine examinations there should

be a careful examination made of each case of slight sickness occurring among the workers. Attention may be called to these cases either by (1) visits to the hospital by men while working, for slight ailments such as headache, toothache, indigestion—we average seven such cases daily in our emergency hospital; (2) cases found during visits of our welfare nurse; (3) cases referred by foremen, superintendents, or fellow workmen; (4) disease detected while attending to any injury.

The way these cases of ambulatory sickness were handled in some of our military camps during the "late unpleasantness" is an illustration of how it should not be done. In one large camp in the Middle West these men lined up and were rapidly questioned and as rapidly classified into two great groups, the respiratory group and the stomach and bowel group. The former got Brown's mixture and the latter castor oil.

If we are going to run a dispensary for our employees who get sick at the plant, let us run it right. Let us give each one such examination as his case warrants. Let us give him careful medication and advice and then either refer him to his family physician or follow up the case ourselves until we are sure he is well.

During the trachoma epidemic a few years ago, I examined two thousand eyes in two days and one night, working continuously with the aid of one nurse. Twelve positive cases were found and twenty suspects. An eye specialist went over these cases, confirmed the twelve and added three cases of suspects to the positive list.

Of the positives, all were treated and all cured but one. The suspects were given weekly and then monthly examinations for several months. The positives are still under observation. There has been one recurrence. I use the word "cured" here in only a relative sense and regard trachoma "curable" in about the same sense as we can speak of curing syphilis or gonorrhea.

### Why Institute Examinations

Good and sufficient reasons appear in all of this for the routine physical examination of the men. The outstanding benefits of such a régime may be briefly stated as follows:

(1) To sift out the physically, mentally, or morally unfit. In addition to rejecting the man with hernia, or the man with only one eye, one hand or one foot, it is just and wise to reject the degenerate, the man with active venereal disease, the chronic alcoholic, or the drug addict.

How far we should turn our mill into a home for the ruptured and crippled, a school for the feeble-minded, a place of reform for the vicious, or a Keely Cure, rests with the management; but if we are going to do any of these things, we should do them with our eyes open.

(2) To make a systematic and permanent record of the imperfections of those whom we do employ—the fingers missing; the crippled hands; the crooked elbows; the stiffened knees and hips; the flat feet; the corneal scars; the open hernial rings; the deaf ears; the flat chests; the heart murmurs; the scars of wounds and operations; the badly set fractures; the missing or decayed teeth; the rapid pulse; the exophthalmic goitre; the enlarged glands; the stuttering and the stammering; the hare-lips, cleft palates, varicoceles, hydroceles, pigeon breast, and hallux valgus; the alcoholic breath and dilated facial capillaries—and so on through the long list.

We should find out and record these things: (a) that we may more intelligently treat our employees when sick or injured; (b) that we may be better protected against the malingering; and (c) that we may more accurately estimate the damage we have done to the man if we injure him.

(3) To help us help the man; that we may put him in the right way to get his errors of refraction corrected; his hernia operated; his scabies cured; his teeth repaired; or his heart saved from further damage.

(4) It forms one of the best points of contact between

employer and employed. If the examining surgeon is the right man in the right place; if he is kind and courteous; sympathetic and tactful, cleanly in his habits and attractive in his personality; if he has the gift of getting the confidence of the stripped stranger in one minute and keeping it; if he has the rare common sense to know just how much to say to each man—he can soon overcome all opposition to examination of employees. He can make the examinations one of the most popular and useful things about the mill. He can do much to make the new employee into a loyal worker. He can start the men toward better health and more efficiency.

(5) The men already working in the mill have a right to be protected against contagious or infectious disease; against the vicious, the hopelessly stupid, and the degenerate; against the man too blind or too deaf to protect himself or others from danger.

(6) Examination has shown us the frequency of certain diseases and conditions among the workers, and has placed us in a position to grapple the problem as a whole.

(7) The conscientious, thorough, systematic examiner receives a valuable training in this work, becomes more and more proficient in rapid, accurate diagnosis, and acquires a wide knowledge of men and a rare judgment in the placing of them that must be of great value to his employers and a source of satisfaction to himself.

(8) As the years go on, and as we do more and more of this follow-up work; as the improvement in health and efficiency of the workers becomes more apparent; as the great importance of preventive medicine is borne in upon us; as we look beyond the mill to the homes of the workers and see the appalling amount of preventable sickness among the men and their families, we shall feel the need of systematic, regular examination of all the *well*; we shall catch disease in its incipency; we shall study the causes of sickness and remove them.—Then and not till then will the industrial physician have fulfilled his mission and come into his own.

(9) Finally, examination of employees, done in the right spirit and with the proper "follow-up," is in keeping with the trend of the times toward better living, better and healthier homes and mills; more help to the fellow that really needs it; and toward that feeling of brotherhood which must come if we are to solve the problems that confront us.

### DOCTORS CAN PRESCRIBE BEER

The opinion handed down by Attorney General Palmer, March 3, before he retired from office, holds that it is not within the power of the Internal Revenue Bureau, through regulations, to limit the number of permits which may be issued for the manufacture and sale of spiritous, vinous or malt liquors for medicinal purposes, except that permits for retail sale are limited to reputable druggists who are pharmacists or who employ a pharmacist.

This ruling takes from the Bureau the power to refuse permits for manufacture or sale, where application is made, even though the Commissioner believes a certain number of permits would be all that was necessary to take care of legitimate demand.

### THE TYRANNY OF DIRT

A hundred years ago people shuddered at the name "Gaul fever," a terrible pestilence, which attacked judge and jury, prisoner and onlooker at Old Bailey. We call it typhus fever now, and it is rare in Britain, thanks to the enthusiasm of the early nineteenth century hygienists. It is a dirt disease, it can be controlled by care and cleanliness. It is due to a microbe, not yet isolated, which is transferred from man to man by infected lice. As Sir Ray Lancaster says, the Angel of Death they spoke of a hundred years ago is the clothes louse, which can be readily exterminated by the use of benzine. We cannot but feel that it was almost contemptible to have submitted for centuries to a tyranny of dirt; but the point is that we are continuing to submit to similar things. We are slow to learn the lesson of Control of Life.—Thomson.

# FOCAL INFECTIONS AS AFFECTING TRIVIAL INJURIES

BY C. D. SELBY, M.D., TOLEDO, O.

THE inflammations that were formerly known as rheumatism are now generally recognized as chronic infections of secondary origin. The foci from which these metastatic infections are derived appear most frequently about the teeth and jaws and in the tonsils, sometimes in the sinuses, and occasionally in the intestinal and genito-urinary tracts. They seldom cause noticeable symptoms; nevertheless, they are the source of bacteria and toxins which pass into the blood stream with more or less regularity. An immunologic reaction results from this constant contamination, but the balance between health and disease is occasionally so delicate that any slight lowering of resistance may disturb it and allow the infection to become active in the area affected.

## Sequelae to Simple Injuries

The process is serious because it is insidious. Being quiescent, the primary foci attract little or no attention. Causing no sudden active disturbance, the blood stream infection arouses no suspicion. Beginning perhaps with a trivial injury, such as a contusion or a sprain, the local manifestation causes no alarm. The whole process is one of gradual development, and perhaps the first intimation the patient has of trouble is that he is not recovering from an injury quite so quickly as he should. Even so, he may continue optimistic and even apologetic. "It was a little worse than I thought," he is prone to explain. Then, sooner or later, he realizes that he needs medical advice and seeks it, only too frequently to learn that the trouble has progressed so as to baffle medical skill.

Although many of these local manifestations of focal infection make their appearance without apparent reason, a great many of them do seem to follow injuries of a more or less trivial nature; in fact, patients are often inclined to blame injuries for their localizations, and with some justice, for we now know that the hyperemia and stasis which follow injuries, however, inconsequential, are enough to cast the local balance of power to the infection.

If the patient is so employed that he may become a beneficiary under a compensation act, and the injury he alleges has been received under circumstances that would entitle him to compensation, he is then quite within his rights if he makes claim for compensation for disability arising out of the sequel to the injury, or the local manifestation of a focal infection, even though the focus is the principal cause of his trouble. In such a case, and under the law, the injury would be regarded as having accelerated or aggravated a pre-existing condition.

Trivial injury plus focal infection equals compensable disability. In the light of the foregoing, the duty of physicians is clear cut. They should:

(1) Determine what kinds of trivial injuries are most apt to be followed by infection of focal origin; and,

(2) When injuries of this type present themselves, seek for foci of infection and endeavor to secure their eradication.

This program is an application of preventive medicine as well as curative medicine. It seeks to prevent disabilities, sometimes of the most discouraging and discomfiting varieties, and aims to save the state social and economic losses.

Physicians have another quite important duty with regard to these cases. This is:

(3) To pass upon the validity of claims for compensation arising out of disabilities due to metastatic infections, alleged to have been the effect of injuries of a more or less trivial and, in themselves, non-incapacitating nature.

## As Affecting Compensation

This question is often extremely perplexing. Nevertheless, if the evidence of injury is authentic, the pathology of the effected part is definite, and the existence of a focus of infection is proved, then the presumption is justified in favor of the validity of the claim.

The most common varieties of trivial injury in which metastatic infections may be expected are as follows: (1) Simple fracture of a terminal phalanx; (2) Contusion of the end of a digit; (3) Sprain, particularly of the knee, wrist, ankle, elbow, shoulder, and hip joints; (4) Strain, especially of the back, deltoid and gluteus muscles.

## Phalangeal Fracture

Fractures of the terminal phalanx are very baffling, largely for the reason that they appear to be so trivial. They are apt to be taken for contusions and treated as such. If the fracture severs the artery to the distal fragment, infection is almost certain to ensue, and recovery cannot be expected until the fragment is excised.

All contusions of the ends of digits should be considered as fractures until proved by the Roentgen ray to be otherwise. The Roentgen ray will of course establish the fact of the fracture, but it cannot prognosticate the infection. The continuity of the blood supply is the principal factor in that, and there is no method for determining it except that of waiting for developments.

The ideal method of treating these cases is to eradicate the infectious foci and remove the denourished fragment. It is the usual experience, however, that patients think the treatment out of proportion to the injury and refuse to submit to it. The course most often pursued is: (1) Splinting of the digit; (2) observation over a period of several weeks; and, finally; (3) removal of the fragment if infection has occurred.

## Contusion of End of Digit

In the fleshy part of the end of each digit there is a fascial sac. If a contusion causes bleeding within this sac without rupturing the sac itself, and, if there are foci of infection elsewhere in the body, an infection will probably occur in the sac. The first thing to be done in cases of this character is to incise the sac. This lets out the blood, relieves the tension and therefore the pain, and greatly lessens the chances of infection, even though no primary foci are removed. Should primary foci exist, the patient should certainly be fully informed of the danger, and given the privilege of determining the course he wishes to pursue.

It is very rare that a patient considers either a fracture of a terminal phalanx or a contusion of the end of a finger sufficient cause to warrant the removal of his tonsils or the extraction of some teeth. Almost without exception, the patient will say, "Well, let's wait and see how it turns out."

Perhaps a physician is not warranted in insisting upon the removal of primary foci as a means of preventing the possible development of trouble in connection with an in-

jury to a finger, but there is positively no question as to the justification of such a measure as a means of preventing the development of an arthritis, or a myositis, or a neuritis, because all three are capable of producing life long incapacity if permitted to become well established.

Of course the ideal procedure in these cases, as in all, is to make a complete physical examination; but it is seldom that a physician feels warranted in going so thoroughly into a study of a case that is apparently of a trivial nature, nor does the patient expect him to do so. Nevertheless, for his own protection, a physician certainly ought to investigate the possibilities of focal infections by examining those parts of the body that are most frequently affected by them.

The following routine is therefore suggested in connection with the treatment of all joint injuries, whether severe or trivial, and all muscle contusions if they are not too trivial in their nature:

(1) Inspect the mouth for bad teeth and infected tonsils.

(2) Examine the sinuses for evidence of infection. If the patient gives the history of having a chronic nasal

discharge, this is pretty suggestive evidence of a sinus infection.

(3) Go into the history of previous conditions of health and, if the facts are suggestive of chronic intestinal intoxication, or a genito-urinary infection, appropriate examinations and laboratory tests should be made to determine the existence of infectious foci in either of these two tracts.

(4) If foci are discovered, the patient should be fully informed as to what he might expect, and he should be advised to have the foci removed.

(5) During this time of investigation the injury should be given the usual method of treatment. This does not differ in any way from the treatment ordinarily accorded contusions and sprains.

(1) Foci of infection should be looked for in all cases of (a) injury to the ends of digits, in all (b) joint sprains, and all (c) muscle strains.

(2) Such foci should be removed whenever possible; because foci of infection may cause these injuries, whether trivial or severe, to become chronic inflammations of a markedly incapacitating nature.

## FIELD HOSPITALS IN CONSTRUCTION WORK\*

By J. P. CLEARY, M.D., DU PONT ENGINEERING COMPANY, DETROIT, MICHIGAN

THE importance of field hospitals in construction work is steadily gaining greater recognition. They have, indeed, become an indispensable part of organizations in that particular field of labor. It is my purpose, or rather my desire, to suggest some data from which a firmer conviction may be gained of their value; value that is both practical and altruistic. It may be added that full discussion of the subject in all its ramifications would consume more time than my readers have to give, and hence only the main ideas relating to the matter will be advanced.

In the initial stages of these components of the complete scheme of a working plant, rendering first aid to the injured seemed the end at which to aim, but field hospital service has obviously become extended far beyond that original scope. It now incorporates within the bounds of its efforts the conserving of the general health of the workmen, their social welfare, and their relative fitness for the tasks they assume.

The efficiency of the worker in the strict line of his employment is easily seen to depend to a certain degree upon his home life, his general environment, and the entire social status. These facts appear, perhaps, to savor of some sort of scientific theory, and invoke sociology or kindred ideas of wide projection, but one gains easily the notion that herein science is not entirely technical, nor the principles too involved for application in industrial and labor problems.

### A Matter of Mutual Benefit

Accepting as axiomatic that the interests of both the employer and employee are identical in the last analysis, it behooves all concerned to consider in some detail the practical advantages of field hospital service.

The employer derives what may be styled a mercenary benefit, but he also enjoys the reflex action of practical humanity. The time, the very essence of constructive work, which would otherwise be wasted by removal of an

injured workman to a hospital or physician's office some distance away from the immediate field of labor, is saved, and also the attendant expense. The employer has the chance to show sincere sympathy for the suffering employee by providing the means of caring for the injured on the "home grounds." Then, quick conveyance to some distant hospital or office entails in itself aggravation of the accident or disease. Measured in dollars and cents, elements to be watched in these days, the economy of treatment nearby cannot escape attention. The opportunity to administer instant remedies, or make quick diagnoses, and thus obtain a grasp upon the malady or injury immediately, can easily be figured by business men in terms of money. The return of the employee to his work as quickly as possible is an important consideration, and in this desideratum employer and employee share equally.

The cost of installing and maintaining a hospital is more than offset by the advantages derived. Insurance companies give a lower rate on liability insurance to concerns maintaining a first aid station at their plants. The expenditure for the physician's services, the supplies used, the equipment, and all other expenses can be easily ascertained, but it would be difficult, indeed, to determine the actual monetary returns from the investment, for the influences of the plant hospital are wide and numerous.

In the construction of a plant for the Cadillac Motor Car Company in Detroit, Mich., the Du Pont Engineering Company, from August, 1919, to August, 1920, employed, all told, about 17,000 men, the maximum at any one time being about 3,600, and the minimum about 800. Construction work has many hazards, probably many more than exist in industries engaged in operation. During the year referred to there were 4,490 injuries. Eighty of the number were major injuries, necessitating loss of time. Of these eighty injuries, four resulted fatally, one in permanent, total disability, and the remaining seventy-five caused a loss of approximately 14,752 working hours, an average of 196.6 hours per major accident. In addi-

\*Delivered before the Construction Section at the Ninth Annual Safety Council, at Milwaukee, Wisconsin, September 29, 1920.



tion to the 4,490 first dressings or treatments administered, approximately 3,229 redressings were required, amounting to 7,719 treatments for injuries, administered during the year.

It is estimated that 3,500 medical cases were treated during this time, making a total of 11,219 treatments given. During the influenza epidemic last winter, on an average of thirty medical cases were treated every day. Of the 11,219 treatments, perhaps 1,432 were required in cases of major injuries, leaving 9,787 treatments administered for minor injuries or illness.

### The Matter of Costs

The cost of equipping and maintaining the plant hospital here for the period mentioned amounted to \$6,800. Of this amount, \$5,900 was applied to the treatment of minor injuries and medical cases. Dividing this amount by 9,787, the number of treatments, gives an average cost of sixty cents each.

During this period of time, 15,765 men were examined by the medical department, and 15,615 were accepted, and placed on the company's roll. In addition to this number, there were approximately 2,500 men on the rolls of the sub-contractors during this time, making a total of 18,115 men who were protected by the medical department during the year in question. This amounts to an expenditure of approximately thirty-seven cents for each man so protected.

During the same year there were 366 penetrating wounds of the feet, resulting from stepping on nails. Of that number, two, or 0.54 of 1 per cent, resulted in lost time.

It may be of general interest to know that in the dye works of the Du Pont Company at Wilmington, Del., during the year 1919, with an average working force of 625 men, the compensation paid during that period was only \$6.00, a really remarkable record. In the same plant 7,778 medical and accident cases were treated during the year referred to, at a total cost of \$2,383.41, or an average of thirty-one cents per case. In the first six months of 1920, the Wilmington plant had 1,207 surgical cases, and of that number only five were serious enough to necessitate any loss of time.

To be of greatest value, the field hospital should be centrally located, so that it may be easily and quickly reached by the injured. Its location should be pointed out to all new employees before they start to work. Whenever possible, the employment department should be in close proximity to the hospital, so as to facilitate the examination of applicants for work. The hospital should not be placed in a noisy portion of the plant where the rumbling of heavy trucks or machinery would interfere with the efficient use of a stethoscope in making physical examinations. For industries employing more than a thousand men, there should be a plant dispensary and a physician constantly in attendance. The size and extent of hospital equipment necessary depends upon the number of employees. For an industry employing a large number of men, the hospital should contain a waiting room equipped with chairs or benches, and a quiet office where files and a few cots may be kept, so that employees may lie down to overcome some temporary condition, and return to work within an hour or two. There should be an examining room for the doctor. This room should be quiet, and should contain an examining table, a writing desk, several chairs, and other necessary equipment. It should be closed off from the other rooms, so that confidential conversations with the various employees may be held here. In addition, the hospital should contain a

surgical room, where accident cases can receive immediate attention. An x-ray machine and sterilizing room would also be valuable additions.

Where the number of employees would not justify the expense of maintaining a physician in the plant, arrangements should be made with a nearby physician to take care of accident cases, and to allow his office to be used for the purpose of making the medical examinations. In places where such an arrangement cannot be made, one or two promising men, such as foremen, could be easily trained to administer first aid. In plants engaged in night work, men with such training would be of considerable value. All plants, no matter how small the number of employees, should have first aid kits available for immediate use.

### Secured by Mutual Effort

To obtain the best possible results, the cooperation of the employees is necessary. No effort should be spared to bring them to a realization of the importance of reporting for medical treatment immediately after an accident. They should be made to understand that they will not be docked for the time spent in having their injuries treated. To overcome the hesitancy of the workmen about going to the hospital for treatment of slight injuries, a first aid printed slip should be given by the foremen to the injured employees to take to the hospital; this seems to impress upon the injured employee the necessity of receiving medical attention. All injuries, no matter how slight, should be given medical attention, the foremen should be made to realize the importance of this.

Another phase of the value of field hospitals in construction work is afforded by the physical examination of applicants for employment. Contagious and infectious diseases, heart lesions, impaired vision, deformities, malformation, and defects of all kinds, both congenital and acquired, may thus be detected, and unfit applicants can be kept from communicating actual disease to their fellow workmen, or increasing the hazards of accident through their neglect, oversight, or bodily defect. It is needless to remark how this branch of the subject expands upon meditation. It has become a recognized obligation, morally and legally binding employers to eliminate from their forces all whose ailments or defects are such as to enhance the risk of accidents or transmit disease. All must remember how steadily these doctrines of denying employment to the unfit have progressed in acceptance. Human life cannot be placed in jeopardy by careless hiring of the members of the working group.

### Use in Minor Ailments

The field hospital service can be utilized to restore to health those temporarily incapacitated by minor ailments. By this means the labor unit is conserved. The saving of mankind has become of supreme importance, certainly of equal and as far reaching value to the future as the conservation of material resources, in the development of which the human factor is demanded. Such care responds to the dictates of modern thought. It spells wider prosperity.

### A Question of Attitude

The doctor can be of inestimable value to a construction organization, by a proper and sympathetic attitude toward the workmen, and by his willingness to show the men that the company has their interests at heart, both in physical examination and the treating of their injuries. In the physical examination of applicants for employment, the employee has the advantage of an early discovery

of disease, and therefore a more rapid and sure cure, while to the employer there is a reduction in loss of time due to sickness and epidemics. To those employees with organic diseases, the danger of overwork and hazardous occupations can be shown, and the employer gains by a reduction in risks for compensation due to accident disability, deformities, and death. In advising and treating the sick there is brought to the employees, protection from contagious diseases and to the employer a steadier working force. By efficient medical treatment the employer gains an increase in the general efficiency of the working force, and the good will of the employees.

The field hospital has both the mercenary and the altruistic phase, the ledger showing a profit, and the heart

feeling a warmer pulsation. In conclusion, it may not seem too burdensome to recur to one branch of service not directly within the hospital's scope, but so allied with it that it can hardly be overlooked. It relates to the possibility of the workmen revealing to the doctor their home influences, the grievances, fancied or real, within their homes. It requires no argument to gain agreement that such tribulations affect the efficiency of a workman; perplexity, brooding, suffering, mental anguish, all perhaps the products of transitory unhappiness, impair the usefulness of the employee. Field hospital work affords opportunity for the conscientious doctor to give counsel, and often adjust these differences and disturbing factors in the workman's life.

## THE TREATMENT OF ACID AND ALKALI BURNS\*

BY A. K. SMITH, M.D., MANAGER, MEDICAL SECTION, E. I. DU PONT DE NEMOURS & Co., WILMINGTON, DELAWARE

THE wounds caused in tissues by acids and alkalis are not strictly burns according to the accepted definition of a burn. Rather such chemicals belong to a class of materials known as escharotics or caustics, substances which, when applied to living tissue, cause its death and produce an eschar or slough. The strong caustics are sulphuric acid, nitric acid, potash, chlorid of antimony, chlorid of zinc, acid nitrate of mercury, bromin, chromic acid, lime and hot iron.

Applied to the skin, they immediately unite with it, killing the tissues to a depth proportionate to the strength and quantity of the caustic. Their burn is self-limited and immediately the caustic has exerted its strength by union with the tissues it is no longer destructive.

The burns may be conveniently classified just as burns from heat are classified: A first degree burn in which only the epidermis is destroyed or inflamed; a second degree burn extending into the true skin and causing its destruction or inflammation; and a third degree burn which not alone destroys the skin but also extends into the underlying tissues. The treatment naturally varies with the degree of burn.

The most important branch of treatment of these caustic burns is prophylaxis or preventive measures, and under this head come all the safety methods observed and the appliances used to render immediate aid in case of accidental spills.

You will notice hot iron classed as a caustic, and many of these innocent looking liquid acids or solutions of caustic alkalis are quite as potent for harm as the hot iron.

### First Aid Immediate

First aid, to be of any great value, must be immediate aid. Probably the most valuable is the shower bath and, of course, it must be used before any attempt is made to remove clothing, and every effort made to get a large volume of water between the caustic soaked clothing and the skin. Directly after drowning the caustic, saturated watery solution of bicarbonate of sodium may be mopped on the burned area in the case of acid burns, and a 2 per cent solution of acetic acid similarly used in the case of alkali burns. After this has been liberally carried out the patient should be placed in a physician's care.

In simple first degree burns mopping the burned area with dry gauze and the application of a bland, clean oint-

ment, such as boric acid ointment or burn ointment—which is made of bicarbonate of soda and petrolatum—or oxid of zinc ointment, may be used by spreading a liberal layer on gauze and holding it in place with a gauze bandage. Such a dressing relieves the pain and is sufficient with renewal of dressing occasionally.

In second degree burns the wound should be cleansed of all loose rolled up epidermis, mopped with a mild antiseptic, such as boric acid solution, and an ointment applied on gauze, held in place by a rather loose gauze bandage.

In this degree of burn, blisters are encountered. Small blisters, unruptured, are let alone and larger blisters, where tension is likely to cause pain, are opened by first sterilizing the area with a 3½ per cent alcoholic solution of iodine and a liberal incision is made with a sterile knife near the edge of the blister, allowing its top to collapse and remain. The ointment used in dressing these cases should be absolutely clean, sterile, and mildly antiseptic, and should have a melting point that will insure its non-separation on standing in the surgery and still be of such consistency that it will spread with ease.

The dressings are renewed as the judgment of the physician dictates, more often at first, when discharges are profuse; and, later, at as long intervals as possible, in order to allow healing to progress without disturbance.

The epidermis must grow over wherever it has been destroyed, and this growth takes place from the sound edges of the wound only. The newly formed epidermal cells are exceedingly delicate and easily torn loose by the removal of a dressing, and it is for this reason that dressings should be changed only when absolutely necessary.

Third degree burns are cleansed of all loose detritus and dressed with a sterile ointment as in second degree burns. After three or four days the ointment dressing is replaced by a wet gauze dressing, using a sterile, normal, salt solution. The dressing must be kept wet by repeated applications of the salt solution.

A slough forms in these cases, necessitating a long wait until the sound tissue loosens and throws out the dead material, and all this must take place before healing takes place to any extent.

The use of wet dressings leaves the wound in a very favorable condition for skin grafting, should it become necessary.

The long time required for healing in these cases is due to the slow separation of the slough, and after that has taken place, granulation tissue must fill up the

\*Read before the Chemical Section, Ninth Annual Safety Congress, Milwaukee, Wis., September 29, 1920.

sloughed out spaces and a new epidermis grow to cover the entire area.

Healing may be hastened by a careful removal of portions of the slough when redressings are being made; also by keeping down excessive or exuberant granulation tissue growth; and, most important of all, by skin grafting.

The making of numerous small pin point grafts, some of which will grow, will reduce the time of ultimate closure of the wound. In some cases larger grafts, by the Thiersch method, may be preferable.

Shock may be an accompaniment of second and third degree burns. It should be combated by a hypodermic of morphin, and the earlier it is given the better.

The patient is wrapped in hot blankets and surrounded with hot bottles or hot bricks. Care should be taken to cover the warming bricks or bottles with flannel or other material, to prevent burning the patient. Salt solution may be introduced into the system by one of the various methods, to increase the volume of blood. Ordinary stimulants given by the stomach are of little value in this condition.

Burns of the eyes by caustics are given first aid by douching the eye with a watery solution of bicarbonate of soda in the case of acid burns and a 1 per cent or 2 per cent solution of acetic acid in alkali burns, after which a piece of boric acid ointment about the size of a pea is put under the eyelid and carefully worked into all corners by gentle manipulation on the outside of the eyelid. Further treatment of the eyes can best be done by an eye specialist.

In giving this, our treatment for caustic burns, I am aware of the various other treatments used in burn cases, many of which are not without good points; but I believe that the treatment as outlined will give the patient quicker relief from pain and quite as rapid a recovery and with as little scarring as any other method.

## MENTAL HYGIENE OF INDUSTRY

Mental power is the greatest force in the world and is still to be studied from the standpoint of industrial production, according to Mary C. Jarrett in a recent issue of *Mental Hygiene*. Of the necessity for a general understanding of the way the human mind works and of social investigation of problems affecting the worker's industrial capacity, she quotes Miss Frances Keller: "Nothing but science has even been able to understand power of any kind. Engineering is the only method that holds out any promise of ultimate success. Increasingly the engineer untrained in man power, but having the essential groundwork, is becoming the manager of men."

This contribution by Miss Jarrett is a report of work done in collaboration with the late Dr. E. E. Southard. It outlines the manner in which the movement for mental hygiene in industry has taken shape and in the interest of developing more exact methods she surveys the present situation and analyzes the inquiry into this subject made by Dr. Southard for the Engineering Foundation. A bibliography of 1,600 titles dealing with the human element in industry was collected and serial studies made which were to have been incorporated in a handbook on the subject, an undertaking that was interrupted by the untimely death of Dr. Southard.

The inquiry developed no lack of evidence in the industrial plants visited that the psychopathic employee is a recognized problem. Usually the cases cited as difficult were among the best workmen, and the problem in each case was how to keep the men at work. The number of workers with actual mental disease is small,

but the harm that may come to any organization because of these cases is out of proportion to the size of the group. The time required to deal with this group intelligently if they are properly understood through medical advice is relatively very little. The second group for the mental hygienist or the individuals who are ordinarily called "difficult," "peculiar," "cranky," "touchy," "irritable," "moody," "disagreeable."

These two groups would constitute nearly half of the average working force, but the efforts of the human engineer would by no means be confined to the workers with demonstrable disorders. The problem of the largest group of workers would be chiefly to develop their mental ability.

Knowledge concerning mental hygiene has been gained largely through the study of mental diseases, and it may be considered as proved that contributions which make for the better handling of men which would be of great practical value to industry have been made by psychiatry and psychology. The time has come for the constructive application in the case of normal workers of the principles of mental hygiene looking toward the improvement of industrial organization. Some points of interest in this subject evinced by personnel workers, industrial physicians, and manager are summarized by Miss Jarrett under fifteen heads, and it would appear that no opposition to progressive work in the mental hygiene of industry is to be encountered from industry. A deterrent might be expected in the fear of the employee that the recognition of mental disorder may discredit the worker, but it will not be difficult to show the employee that the object of mental hygiene is to make him more fit and better able to hold his job.

A mental hygiene program calls for some definite organization. A practical plan is suggested in Dr. Southard's idea of a "mental hygiene working party." Mass methods are not called for; the work must be in terms of the individual. Cooperation on the part of industrialists, especially in respect to the findings recorded in their turnover sheets, would obtain welfare values for the community as a whole.

Increasingly the solution of special problems of industry are found to bear an essential relation to general health problems. Certainly personality adjustments in industry cannot be divorced from family and community relations and with additional instruction and training in matters pertaining to industrial organization the psychiatric social worker should prove an asset to industry.

S. P. M.

## STATE CHAPTERS

Pennsylvania, Ohio, and New Jersey have organized state chapters of the National Association of Industrial Physicians and Surgeons. All of the so-called "Industrial States" should have these chapters.

Your Secretary is prepared to render all possible assistance in their organization and will, upon request, furnish a "model" constitution and by-laws.

If you haven't such a chapter in your state, why not get busy and organize one?

## WISCONSIN HOME-COMING

The State Medical Society of Wisconsin will celebrate its seventy-fifth birthday by holding a "Home-Coming" meeting in Milwaukee, September 7, 8, and 9, 1921.

The officers of the society are anxious to secure at this time for mailing purposes the names of all former Wisconsin men. They will confer a favor by sending their names and addresses to Dr. Rock Sleyster, secretary, Wauwatosa, Wis.

## INDUSTRIAL HYGIENE AT CALIFORNIA UNIVERSITY

THE United States Public Health Service publishes an outline of the course in industrial hygiene given at the University of California. These courses are in four parts: (1) The hygiene of temporary industrial centers, such as mining, lumber, railroad, and military camps; (2) factory and occupational hygiene; (3) industrial accidents and safety measures; (4) health supervision, welfare work and workmen's compensation.

The outline of the course follows:

### Temporary Industrial Centers

(1) *Introductory remarks.*—The history and rise of industrial hygiene; its scope. The future of industrial medicine and surgery.

(2) *Sanitation of camps.*—Temporary industrial and military camps. Location of sites; topography, from standpoint of water, drainage, and waste disposal. Camp layouts.

(3) *Water.*—Source of supply. Wells. Purification of water. Permanent and temporary projects. Dangers. Tests.

(4) *Waste disposal.*—Dangers of soil pollution by fecal matter. Latrines and sanitary privies. Septic tanks. Garbage and manure disposal. Necessity for camp cleanliness. Incinerators of different types (illustrated).

(5) *Housing.*—Tents. Bunk houses. Mess houses. Baths. Barns and corrals; relative importance of proper location. Sanitation.

(6) *Food.*—Well-balanced diet. Dangers from human and fly contamination. Food preserving. Diseases due to improper food and disease transmission through food handlers. Supervision of food.

(7) *Insects as disease carriers.*—Life history of the fly; prevention of breeding; means of destruction—fly-traps and other measures. Bedbugs, lice, and fleas. Diseases transmitted by these insects and their economic relations to industry. Disinfection of beds and buildings. Delousing.

(8) *Mosquitoes.*—As disease carriers of malaria and yellow fever. Life history of these insects. Difference between the varieties. Historical review of the discovery of these insects as carriers. Mosquito control. Treatment of human carriers.

(9) *Other camp enemies.*—Hookworm, venomous reptiles, poison oak and ivy, venereal and human-carrier perils.

(10) *Camp diseases.*—Typhoid and other gastro-intestinal diseases. Respiratory and other communicable infections. Value of vaccination. Newer conception of isolation. Isolation quarters.

(11) *Mining.*—Mine gases; explosions; prevention. Rescue and resuscitation methods.

### Factory and Occupational Hygiene

(12) *Factory.*—Factory history. Types of shops. The modern factory. Sites. Description. Interiors. Standards for toilet, drinking, and washing facilities. Disposal of factory waste.

(13) *The worker.*—Women in industry. Child labor. Necessity for personal hygiene. Clothing. Care of the teeth and skin.

(14) *Industrial physiology.*—The human machine. Fatigue. Muscular tonus. Rhythm in industry. Overwork. Output. Rest. Day and night work. Men versus women in industry. Economic relations.

(15) *Industrial lighting.*—Artificial and natural light-

ing. Consequences of defective lighting. Need for supervision. Standards. Excessive light. Eyestrain. Preventive measures.

(16) *Ventilation.*—Physiology. Recent research. Air changes produced by human beings. Harmful effects of stagnant air, high temperature, and humidity. Standards. Mechanical ventilation. Dust removal. Excessive heat. Sunstroke and heat exhaustion. Use of instruments. Psychrometer, anemometer, and thermostats.

(17) *Special occupational disorders.*—Disorders of the eyes and ears. Dermatic disorders. Results of fatigue. The neuroses, occupational cramps, etc.. Effects of heat and cold. Postural defects. Effect of special mechanical appliances such as the air hammer and other tools. Processes involving exposure to occupational infectious diseases, such as anthrax. Health hazards will be classified as to industrial origin and the conditions related to the symptoms to be looked for.

(18) *Toxic gases, fumes, and vapors.*—Ammonia, aniline, benzol and benzine, chlorine, methyl alcohol, carbon monoxid and dioxid, sulphur dioxid, "dope" poisons, phosphorus, T. N. T., soot. Symptoms and prevention.

(19) *Toxic metals.*—Lead, mercury, arsenic, chrome, brass, etc. Symptoms and prevention.

(20) *Dusty trades.*—Classification of dusts. Effects of dusts upon the skin and lungs. The tuberculosis problem. Morbidity and mortality statistics. Determination of amounts of dust. Prevention. Use of mechanical appliances, wet and electric processes. Discussion of exhaust devices; respirators. Importance of medical examination of employees.

(21) *Occupational diseases due to harmful environment.*—Caisson disease. Divers and submarine operators. Aviators and high altitude. Symptoms and prevention. Decompression chambers for tunnel workers. Explosives. Gas warfare. Electrical shock. Rescue methods. Artificial respiration.

### Industrial Accidents and Safety Measures

(22) *Accident prevention.*—The personal factor in accident causation. Relation to age, sex, ignorance, physical unfitness, carelessness, overcrowding, poor illumination, unsuitable clothing, defective machinery and structures. Falling. Unclean conditions. Monotony of work. Speeding and long hours.

(23) *How to organize for safety.*—Safety committees. The duty of the employer and employee.

(24) *Safety measures.*—Special problems of certain industries. Safeguards in general. Safety devices for the worker. Statistics.

(25) *Factory fires.*—Origin and spread of fires. Control and prevention of fires. Loss of life due to fires. Fire escapes. Fire drills. Rescue. Burns.

### Welfare Work and Workmen's Compensation

(26) *Medical supervision.*—Purpose and advantages. Dispensary and hospital facilities. Medical and dental service. Public health nurse. First-aid stations and instruction. Physical examination of employees. Accident records.

(27) *Welfare work.*—The sociology of industry. Factory inspection. Rest and locker rooms. Baths. Restaurants. Recreational activities. Community and home conditions. Reclaiming the tuberculous and the cripples of industry.

(28) *Workmen's compensation.*—Legislation for prevention of occupational diseases. Notifiable diseases. Health insurance. Reports.

## CALL FOR ANNUAL MEETING

The annual meeting of the American Association of Industrial Physicians and Surgeons will be held in Boston, Mass., on Monday, June 6, and Tuesday, June 7, 1921. Let us all plan to be there and make this meeting the best one that the Association has ever held. President Geier has appointed the program committee and they are now hard at work in arranging all the details for the meeting; let us express our appreciation of their efforts by being present at the meeting.

### Hotel Accommodations

We present herewith a list of Boston hotels and their prices and all members are urged to write immediately and make reservations.

Name	Address	Rates per Day	Number of Rooms
Adams House	Washington and Mason Sts.	Application..	
Arlington	Arlington Square	\$2.00 and up.	
Burkminster	645 Beacon St.	\$3.00 and up.	450 1st class
Charlesgate	Beacon St. and Back Bay Park	\$4.00 and up.	
Essex	Atlantic Ave. and Essex St.	\$1.50 and up.	400— (300 bath)
Ritz Carlton	Boylston and The Hotel	Fens	\$2.00 and up.
Garrison Hall	Garrison and St. Randolph Sts.	\$2.00 and up.	300
Harvard	Huntington and Longwood Aves.	\$2.00 and up.	150
Puritan	390 Commonwealth Ave.	\$1.00 and up.	
Savoy	455 Columbus Ave.	\$1.50 and up.	200
Somerset	Commonwealth and Newbury Sts.	\$2.50 to \$6.00.	
Veredome	Commonwealth Av. and Dartmouth..		

**Amendments to Constitution and By-laws.**—Article IX of our constitution and by-laws reads:

This constitution and by-laws may be amended by a two-thirds vote of the members present and voting at any annual meeting of the Association; provided, that the call for such meeting shall have specified the particular amendment which is to be acted upon, and provided also that no amendment shall be acted upon which has not been so specified.

In accordance with this provision amendments to Article III, Section 4; Article VI, Section 1, and Article VIII will be submitted at this meeting for action by our members.

## HOSPITAL LIBRARY AND SERVICE BUREAU

As a member of the Hospital Library and Service Bureau, 22 East Ontario Street, Chicago, Ill., the following letter is addressed by Dr. Frank Billings, its president, to the American Association of Industrial Physicians and Surgeons:

We have all along realized the need of some source from which definite information, data, and reliable figures on all of the many phases of hospital construction, organization, and operation could be obtained. Interest in hospital work from any standpoint develops at once a call for data and figures or the average of a definite class or a distinct organization. To supply these will require a carefully organized and comprehensive collection of all obtainable data about hospitals for study and advance compilations—that answers may be available promptly.

With financial aid from the Rockefeller Foundation, the American Conference on Hospital Service has undertaken to organize and operate the Hospital Library and Service Bureau to meet this situation. We need cooperation, interest, and assistance from your organization, as an organization, and also from your members individually. It will be necessary to ask many of them for information and it is quite desirable that they be informed as to the purpose of the request and the use to be made of the information and also as to the attitude of your organiza-

tion to this project. They should know direct from you also that their connection with the work of hospitals through membership in the American Association of Industrial Physicians and Surgeons entitles them to apply for and receive, free of any charge, any information and data which the library has collected. We must call attention, however, to the fact that data must be collected before it can be given out and this will require a little time.

Please give this project consideration and such publicity as in your judgment is required properly to inform all your membership in this matter.

## MEETING OF PENNSYLVANIA CHAPTER

The Pennsylvania Chapter of the American Association of Industrial Physicians and Surgeons will hold its annual meeting at the William Penn Hotel, Pittsburgh, on Friday, April 15. The whole membership of the National Association is invited for the consideration of the following program:

### MORNING SESSION, 9:30 A. M.

**Chairman.**  
Francis D. Patterson, M.D., chief, Division of Industrial Hygiene and Engineering, Pennsylvania Department of Labor and Industry, Harrisburg, Pa.  
**Address of Welcome**  
By Hon. Clifford B. Connelley, commissioner, Pennsylvania Department of Labor and Industry, Harrisburg, Pa.  
**What Constitutes Industrial Blindness?**  
By Edward J. Stieren, M.D., Jones and Laughlin Steel Co., P. & L. E. R. R. Co., Pittsburgh, Pa.  
By Clarence F. Rarnatz, M.D., Pittsburgh, Pa.  
**SYMPOSIUM ON BURNS AND THEIR TREATMENT**  
**The Paraffin Method**  
By William O'Neill Sherman, M.D., Carnegie Steel Co., Pittsburgh, Pa.  
**The Picric Acid Method**  
By George H. Hallerstadt, M.D., Philadelphia & Reading Coal & Iron Co., Pittsville, Pa.  
**Other Methods**  
By Hubley R. Owen, M.D., Bureau of Police and Fire, Department of Public Safety, Philadelphia, Pa.

### AFTERNOON SESSION, 2:00 P. M.

**Minimum Standards for First-Aid**  
By C. D. Selby, M.D., Toledo, Ohio.  
**What Should Be the Attitude of the Industrial Physician Towards Health Insurance Legislation?**  
By J. E. Sweet, M.D., University of Pennsylvania, Philadelphia, Pa.  
**The Need for Adequate Records of Lost Time by Reason of Sickness or Accident in Industry**  
By Bernard J. Newman, consultant in industrial hygiene, United States Public Health Service, Philadelphia, Pa.

## NEW MEMBERS ANNOUNCED

The American Association of Industrial Physicians and Surgeons welcomes the following new members: Charles T. Cutting, Philadelphia, Pa.; Harry W. Mayes, Brooklyn, N. Y.; Ben F. Coe, Indiana, Pa.; Donald B. Cragin, Hartford, Conn.; Walter E. Caswell, Brockton, Mass.; James H. West, Cleveland, O.; A. J. Barlow Herbert, Grand'mere, P. Q., Canada; Charles K. Ervin, Cincinnati, O., and Alexander L. Price, Wetherfield, Conn.

Every physician who is engaged in the practice of industrial medicine and surgery should be a member of this national organization. It is the one organization above all others in which he should hold membership. We estimate that there are at least one thousand physicians who specialize in the practice of industrial medicine and surgery who are *not* members of our organization.

They should be members, there can be no question about that; and the way to secure them is by personal solicitation by our membership.

If you know a physician in your town who is practicing industrial medicine, give him an application blank, copies of which blank will be promptly supplied you upon written request to the Secretary, and urge him to make application.

You will be interested in the progress of our Association as indicated by our membership by years:

1916—1917	321
1917—1918	303
1918—1919	241
1919—1920	477

## DR. SAWYER GOES TO WASHINGTON



Underwood &amp; Underwood.

Dr. C. E. Sawyer, Marion, Ohio, has recently gone to Washington to assume his duties as physician to the president. In line with the policy of President Harding that affairs relating to public health education and social welfare are of the greatest moment, Dr. Sawyer has been given full authority to direct a thorough investigation into the needs of this subject and on the basis of accumulated facts to work out concrete plans for efficient and economical operation of these matters.

## CANCER CONTROL

Little, if any improvement has been observed in the cancer death rate in the past ten years, says the Metropolitan Life Insurance Company in a recent report, although this decade has witnessed remarkable progress in the control of malaria, tuberculosis, typhoid fever and other conditions where preventive work has been rationally conceived and consistently carried out. In the entire Industrial Department of this company the cancer death rate has not varied much from 69 per 100,000 since 1911.

The one encouraging fact in the cancer mortality data of the industrial department during the decade is the slight downward trend of the rate for white females. There has been a gradually increasing death rate from cancer among colored females and colored males. The rate for white males has been practically stationary. It may be true that the efforts of the cancer control campaign have been successful in bringing more of the accessible and more readily recognized early cancers of white females to the attention of the surgeon, and that many deaths from these conditions have been postponed. This is the first suggestion we have had in our figures that the moderately developed anti-cancer movement has begun to influence death rates.

Health officials and executives of private organizations would do well to inaugurate local educational activities for cancer control. In Cincinnati, recently, an organization known as the Divisional Council on Cancer Control was effected. This group is under the joint auspices of the City Health Department, the Academy of Medicine, and the Public Health Federation. The work is to be managed by a Committee of Fifteen, carefully selected from the several religious, nursing, medical and health educational groups in the city. It is planned to carry on an intensive system of lectures among women's and mothers' clubs and other organized groups who may desire to be informed on the subject. There is also to be an arrangement with the local newspapers for bringing the

facts of cancer control to the attention of the public. Denver recently held a series of popular meetings on cancer control. Bringing the message of cancer relief to the attention of the public through local educational effort can be furthered by health agencies, especially since the American Society for the Control of Cancer now has local representatives in nearly all States who are prepared to cooperate in developing such campaigns.

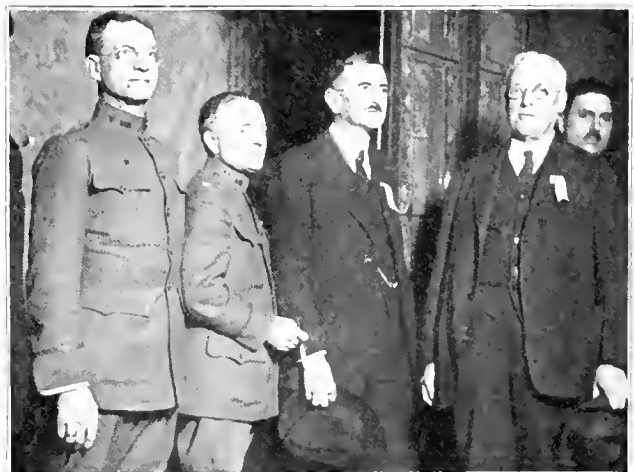
## CHILD HEALTH DEMONSTRATION

The National Child Health Council, consisting of representatives from six national organizations either wholly or in part engaged in health work for children, has announced plans for a child health demonstration in some one community of the United States. Much is to be gained from the demonstration of a comprehensive and well balanced child health program that can be applied to constructive child welfare work on a national scale. Announcements will be made within the next few weeks of the plans of the Council as to the selection of the community and of the conditions which are considered desirable in order that the demonstration may be of the greatest value.

## EUGENICS CONGRESS

The Second Annual Eugenics Congress is announced to be held in New York City September 22 to 28, 1921, the inquiry of the Conference being directed toward the results of research in questions of race improvement dealing with (1) research in the domain of pure genetics in animals and plants and studies in human heredity; (2) the consideration of factors which influence the human family and their control, this to include facts of improved and of unimproved families and the persistence, generation after generation, of the best as well as the worst characteristics, (3) the topic of human racial differences covering migration of races, the influence of racial characteristics on human history and the teachings of the past with bearing on the policies of the future, and (4) the discussion of eugenics in relation to the state, to society, and to education.

## MEDICS MEET IN CHICAGO



Underwood &amp; Underwood

The Council on Medical Education and Public Health, which convened in Chicago during the week of March 8, was attended by more than two hundred leading physicians and surgeons from all parts of the United States and Canada. The picture from left to right shows Maj. Gen. M. W. Ireland, surgeon general of the United States Army; Col. J. F. Siler, of the Medical Corps; Dr. W. L. Carter, Galveston, Texas, and Dr. H. D. Arnold, of Boston, Mass.



# THE NATION'S HEALTH

## Public Health and Public Welfare, Administrative Medicine, Organized Health Service

C.-E. A. WINSLOW, DR. P. H., *Editor*

### OBJECTIVE STANDARDS IN TUBERCULOSIS WORK

WITH the growing tendency to attempt an evaluation of the real efficiency of public health work along various lines, it becomes of increasing importance to devise objective quantitative standards by which various specific activities may be judged. In the course of a recent survey conducted in Rhode Island<sup>1</sup> the attempt has been to formulate certain standards of this kind in respect to tuberculosis,—standards which, though crude and unsatisfactory, may serve as a stimulus to others for the development of the adequate criteria which are so sorely needed.

The crude death rate from tuberculosis is of course the first statistical fact to which we turn in studying conditions in a given community; and the differences, even in generally analogous areas, are surprisingly great. Thus, taking four eastern cities of roughly similar size, the mortality from all forms of tuberculosis for the period 1915-1919 was 199 per 100,000 in Providence and only 105 in Syracuse, with New Haven and Rochester lying between. The reason for such wide variations is difficult to discover, but is probably related to social and economic and racial factors of a complex kind.

As a measure of the efficiency of administrative control, the ratio of reported cases to deaths is a highly significant variable. In Rhode Island during the nine years from 1911 to 1919 there were 118 deaths for every 100 reported cases. In Massachusetts, on the other hand, for the period from 1906 to 1915 there were 72 deaths for each hundred reported cases, indicating nearly twice as full reporting.

In studying the tuberculosis clinic which is, in a way, the foundation of all tuberculosis work, statistical data as a rule are woefully lacking, outside of New York City, where the Association of Out-Patient Clinics has organized an admirable system of dispensary statistics. In most clinics, however, it is possible to obtain figures showing the total number of visits and the number of new patients received during a given period. Highly suggestive ratios can be obtained by comparing these figures with each other and with the population of the area which the clinic serves. The ratio of new patients per 1,000 population per year does not vary very widely. The highest figure noted in the Rhode Island study was 3.5 for New York City, the lowest, 1.7 for Woonsocket, R. I. The ratio of total visits per 1,000 population per year, on the other hand, was 20.8 for New York City against 3.6 for Woonsocket; and the ratio of total visits per new patient was 6.0 in New York, 2.0 in Woonsocket and 1.8 in Paw-

tucket, the figure for ordinarily well organized average clinics like those of Providence and New Haven being between 3.0 and 4.0. Many factors, such as the type of case receiving treatment, opportunities for sanatorium care, and the like, would of course affect this ratio. It seems probable, however, that the existence of a ratio of total visits to new patients below 3.0 pretty clearly indicates inefficiency in clinic administration, while a figure above 4.0 can only be attained by an organization which can hold its patients with unusual success.

In estimating the adequacy of nursing service, which is so important both in finding new patients and keeping old ones under supervision, similar ratios are highly significant. In well organized visiting nurse associations, like those of New Haven and Providence, 7 or 8 tuberculosis patients per 1,000 population are given nursing care, while in a group of small Rhode Island towns this figure fell to 2. The average number of visits per case ranges from 6 in East Providence to 16 in New Haven, and the number of visits to tuberculosis patients per 1,000 population per year varies from 19 in East Providence to 127 in New Haven (where there are nine tuberculosis nurses serving a population of 160,000 persons). The New Haven figures may be considered as representing almost ideal conditions.

Finally, the efficiency of machinery for sanatorium treatment may be studied from many different angles. The number of admissions to hospitals and sanatoria per year in relation to the number of deaths is the first standard which suggests itself. In Rhode Island the ratio of admissions per 100 annual deaths reaches the high value of 91, while in Connecticut it falls to 53. The extent

TABLE I. RESULT OF SANATORIUM TREATMENT AT WALLUM LAKE, R. I.; 3,088 PATIENTS ADMITTED 1906-1916. PERCENTAGES OF TOTAL GROUP.

Condition on admission	Condition on discharge	Per-centage well or living and at work	Condition Jan. 1, 1918		
			Per-centage living, not working	Per-centage dead	Per-centage lost
Incipient .....	Favorable	2	..	..	..
	Doubtful	2	..	1	..
	Unfavorable	..	..	..	..
Moderately advanced	Favorable	10	2	9	2
	Doubtful	10	5	21	3
	Unfavorable	1	1	19	1
Far advanced.....	Favorable	..	..	..	..
	Doubtful	..	..	2	..
	Unfavorable	..	..	7	..
Total .....		28	8	59	6

1. Published by Rhode Island Tuberculosis Association, 109 E. Washington Street, Providence, R. I.

to which transfers from one institution to another may take place materially affects the value of this ratio. The average length of residence in the sanatorium is another important datum. Recently reported statistics range from 129 days at Wildwood Sanatorium to 269 days at Rutland. The factor of major importance in the whole problem is, however, the condition of the patient on admission—for it is this factor above all which determines whether sanatorium treatment shall succeed or fail.

We may close this over-long discussion by citing the results of studies of the after condition of discharged patients at two leading sanatoria which illustrate how and why the anti-tuberculosis program is failing to attain its ends. (Figs. 1 and II.)

Wallum Lake attains ultimate success in only 25 per cent of all the cases treated, while Gaylord Farm cures 44 per cent of its patients; and the primary reason is that but 5 per cent of all cases admitted at Wallum Lake are in the incipient stage, against 22 per cent at Gaylord Farm. The improvement of our nursing service, of our clinic organization, and of our general medical practice so that early tuberculosis may be detected and sanatorium

TABLE II.—RESULT OF SANATORIUM TREATMENT AT GAYLORD FARM, CONNECTICUT: 817 CASES ADMITTED PRIOR TO 1912. PERCENTAGES OF TOTAL GROUP.

Condition on admission	Condition on discharge	Per-centage still arrested	Condition May 1, 1917		
			Per-centage improved or progressive	Per-centage dead	Per-centage lost
Incipient .....	Favorable	11	..	1	1
	Doubtful	7	..	1	1
	Unfavorable	..	..	..	..
Moderately advanced.	Favorable	17	1	8	1
	Doubtful	8	1	12	1
	Unfavorable	1	..	8	..
Far advanced.....	Favorable	..	..	2	..
	Doubtful	..	..	6	..
	Unfavorable	..	..	9	..
Total .....		44	2	47	4

treatment given while there is time for it to operate,—these must be the primary objectives of the anti-tuberculosis movement if it is to reach its goal. EDITOR.

## CARRYING DENTIST AND SURGEON TO A RURAL POPULATION

BY JULE B. WARREN, RALEIGH, N. C.

TO COMBAT ill health in the mountain regions of North Carolina means to overcome the effects of illiteracy, ignorance, prejudice, and poverty. Physical examination, for instance, which discloses that a group of children are in need of tonsil or adenoid operations would of itself insure proper care of a very limited number of cases; for what knowledge of surgery is current among these mountain folk resolves itself into a prejudice against "cuttin' doctors." The approach is provided for, however, in the care of the school child. The teacher and the special Board of Health nurse, through organized health clubs which demonstrate the need, dissipate the unreasoning fear and opposition that may exist on the part of the parents, and prepare the way for the special neighborhood clinics through which Dr. G. M. Cooper, head of the Bureau of Medical Inspection of School Children, for the North Carolina State Board of Health, has brought the services of specialists to the farthest nook and corner of the state. The prices for these services are scaled down to the necessary minimum and provision is made for the payment of the major portion of the bill out of public funds. When this work was undertaken, it was not only a new experiment in the work of the North Carolina Board of Health, but the method was something new in this line of work in the whole country. Dental clinics had been established in a number of cities and states prior to the time the State Board of Health persuaded the North Carolina legislature that it was just as important for the state to care for the health of its children as it was to educate their minds; but the notable difference between the work in North Carolina and in other parts of the country is that in other places the free clinics have been paid for either by private subscription, or the money has been provided by the public, and only those who could qualify as charity patients were treated.

There is nothing new about medical inspection of school

children. The Empire of Japan has had a system of compulsory medical inspection of its school children by competent medical men for more than thirty years. The British empire after the Boer war instituted a system of medical inspection which was made country wide in 1907. In the United States the system has been of a patch-work nature. A number of the larger and more progressive cities of the United States have had fine systems of medical inspection for several years; but it was not made state wide until New York and Massachusetts enacted the laws requiring it several years ago. Even in these and other states which have passed the laws, the medical inspection does not reach the rural districts with the thoroughness that characterizes the North Carolina law, nor is the medical inspection of the children followed up with free treatment on any large scale except in North Carolina.

Since this particular bureau of medical inspection is doing a bit of pioneer work, a glance backward is interesting. The division of medical inspection for the state was organized by the North Carolina Board of Health in 1915, but the work was handicapped by the lack of funds with which to prosecute the plans. Dr. G. M. Cooper was brought to the Board from the county health work in the state and he immediately began to map out a system and to expand it. In 1917 the legislature passed the law which is really the basis of the present progressive program, and the next biennial session of the legislature gave the department of medical inspection enough funds to put free dental and surgical clinics for the rural districts, as well as for the cities, on a firm foundation.

Soon after Dr. Cooper took charge of the bureau work he came to the conclusion that medical inspection of school children in itself was but the means to an end, and that the basic defect of the system lay in the fact that it merely pointed out a trouble and made no provision for remedying it.

"It is pure irony to send the parent of four children in school, all of whom need dental treatment, a note stating the fact, when perhaps he lives twenty-five miles from a dentist and has no money with which to pay for the work, or to send the parent of a child a note requesting that he have the diseased tonsils of his child removed, when he may live a hundred miles from a specialist and does not have the price of a railroad ticket," Dr. Cooper said recently in discussing this phase of medical inspection as it was in North Carolina.

After working on medical inspection of school children for a short time, Dr. Cooper found school teachers sending in hundreds of reports from every county in the state in which it was shown that there were thousands of children whose teeth needed attention, and who had bad throats or diseased nasal organs. He found the teachers, who are the nucleus of the inspection system under the North Carolina law, intensely interested in the work of correction as were the parents in most instances, but it was impossible to get the work done in the rural districts where dentists were scarce and there were no specialists



Outdoor work was done in Bender County. The teeth of 543 children were treated in a district that could boast only one dentist to fifteen thousand people.

at all. The bureau head made an effort to interest hospitals and other institutions in this work, but always found such institutions willing to do the work without charge only on condition that the cases come to them as charity. Many of the families involved were not dependent on charity and did not want to be put in that class. Even if that objection to the old system could be overcome it was impossible to get the work done on as large a scale as the needs demanded. The problem resolved itself down to these two propositions: (1) Getting the dentists and specialists for the work and getting them to the people; and (2) Getting the money from public funds with which to carry on the work.

The first of these problems was met by the establishment of traveling dental clinics and temporary hospitals for operations on throat and nose in the rural districts. This was the program mapped out by Dr. Cooper, but it was a program that would take money and lots of it, for the originator of the idea was determined that the work should not be done on a charity basis. He believed the state should assume the responsibility for treating these children. Here is the way Dr. Cooper feels about charity work as expressed in a statement he issued for one of the health department publications about the time the whole issue was up for consideration:

No zygodactyl bird of the order Psittaci ever told himself 'Pretty Polly' with more satisfaction than otherwise responsible people derive from mouthing 'Not able to pay.' It is unction to their souls. It is balm for many a troubled conscience. 'Oh, yes, this hospital offers free treatment to those who are not able to pay,' says the

president of the board of visitors, adding, of course, 'except a small fee to take care of incidentals.'

'Special provision for those who are not able to pay'; 'the worthy poor'; 'for charity,' are a few of the canting generalities which cover a multitude of the sins of omission. The North Carolina State Board of Health is neither Bolshevik nor Prussian; nor is its mission the setting of a wrong world right; but some of us who have played the game of life in the rough—who have practised medicine and occasionally ourselves have bound up a wound, as well as sat on the 'rail' and watched the big men operate—have so often been balked in a sincere attempt to render honest service by the trite satisfied reply, 'Oh, yes, if he is not able to pay,' that we have become convinced that the expression itself is a howling hypocrite.

Suffering humanity means just exactly nothing to us, but suffering individuals, whom it is partly our duty to assist, mean everything. This peculiarly applies to the correction of the common physical defects of thousands of school children in North Carolina.

Convinced of the need of this type of work among the school children of the state after a personal examination, together with a direct supervision of the examination of 200,000 children in the public schools, Dr. Cooper began the experiment with free traveling dentists in Nash County, N. C., in July, 1918, and since that time the work has been extended to twenty-five other counties both for dental and surgical work among the rural school children.

### Plan Proved Practicable

The records of the examination of the 200,000 children showed that 75 per cent of them had beginning decay in permanent teeth. Less than 10 per cent of the children had ever visited a dentist's office, and at least ninety out of every hundred parents had never made an effort to have the children's teeth looked after.

The neglect was found to be due to several causes: (1) Poverty; (2) ignorance and indifference; (3) morbid fear of the dentist; (4) hesitancy of many dentists to accept young children as patients; and (5) lack of specific instruction in the public school curriculum on the care of the teeth.

Notwithstanding the apparent need and the seeming practicability of the plan, the work was undertaken with some misgivings as to the results. The plans were laid before the annual meeting of the state dental society. Dr. Cooper did not know how the dental profession would feel about it if the state took up the paternalistic work of furnishing free treatment to the large number of school children in the state. There were no grounds for fear that the dentists would feel that the state was taking a living from them by giving free dental treatment to the children; on the contrary, when the matter was presented to the annual convention of the dentists in June, 1918, the following resolution was unanimously adopted:

Resolved: That the North Carolina Dental Society heartily endorses the plan of the state board of health, as outlined by Dr. G. M. Cooper, and that we pledge him the loyal support of this society.

The North Carolina society is forty years old and embraces 80 per cent of the dentists of the state, including the leading members of the profession. It is to the credit of the organization that every member has lived up to the spirit and the letter of that pledge. This applies to all dentists in every county, with one exception so far covered. One dentist in one of the counties took the pains to inform all who listened that "to work on the teeth of children under twelve years of age would bring on diseases." Just what diseases, he was, of course, careful not to state, and that dentist, it may be said, was not a member of the state society.

In the work as it has been developed for the rural



Showing the type of young men enlisted in rural work among North Carolina children, the type of children treated, and the nature of the equipment used.

communities in North Carolina, the first job is the medical inspection required by law. The school teachers do this under the direct supervision of Dr. Cooper. The individual report card for every child is forwarded to the state Board of Health, in whose office the compilations are made. Bad teeth, bad throats, poor eyesight, and other defects of childhood which the teacher can easily ascertain are noted on the cards. Following this, one of the nurses of the board of health makes a visit to the rural schools,

talks over the situation with the teacher and then visits the parents of the children who show physical defect. She prepares the way for the coming of the dentist, who is employed in most instances by the board of health and sent to a county to remain until he completes the job.

These dentists carry a portable dental apparatus with foot engine and such other essentials as are needed for the cleaning and extraction of teeth and for making permanent amalgam fillings. He sets up his portable office anywhere it is most convenient. The school porch is often used, the shady side of the school building in the summer time, or he may utilize the cloak room of the school house in bad weather. The doctor begins work when school opens, or before, and keeps on until late in the afternoon, taking the children as their turn comes. After the first few children have passed through the ordeal the others are anxious to leave their studies for the session with the dentist. All the time the work is being done the dentist or the nurse gives the children instruction on the proper care of the teeth. Tooth brush drills are held and prophylactic work is done during the stay of the dentist in the community.

### The Plan is Elastic

When all the children in one rural school have been treated, the dentist packs up his folding chair and moves on to new fields. He keeps the work up until all the children from six to twelve years of age in the county have been reached, and is then moved to some other county where similar clinics are conducted. While this has been the general plan for holding the clinics, variations were often found necessary, and under these circumstances the plan is elastic enough to permit any changes that local conditions may demand. If the dentist found that the rush of work was such that it was impossible for him to do all the filling needed by every child, all teeth are cleaned and the bad ones extracted and at least one permanent amalgam filling placed where it was most needed. The child's parents are then advised to go to some local dentist for the remainder of the work. If the traveling dentist was working in a rural and mountainous county where dentists were not to be found except by circuitous and long trips to neighboring cities, he simply remained on the job until all the children had been treated.

During the first year of this work 6,678 school children in North Carolina were treated at a cost that ran from thirty cents per child to \$1.10 per child, or an average of about fifty cents for every patient treated. It is

estimated that the parents whose children received this treatment during the first year were saved at least fifteen thousand dollars in dental bills. The whole attitude of the rural population toward dentists and toward the importance of oral hygiene is being revolutionized as a result of this work. Some of the letters from young men the board of health sent to the rural communities interestingly, though unconsciously, reveal this changed attitude.

Here are extracts from the letter a conductor of a clinic in Robeson county wrote while he was in the midst of the work of treating more than fourteen hundred children:

The people here are certainly responding to this work and I am taking the keenest delight in it myself. Of course, this movement can't be anything short of a great success, the worth of which can never be expressed in figures and statistics. To think of the enormous number of sixth year molars that I know I have saved already, knowing their worth, and knowing that they would otherwise have been lost, emphasizes but one aspect of the importance of this work. . . .

Now a little more about my work here. My office hours are from early morning till late in the evening, and at that I often have to see disappointed children go home, not being able to get to them that day. And they are nearly always back on the job next morning. With children there from such great distances and needing attention so much, I can't set any time limits on my operating hours. . . . Our proposition here is not getting the children to come, but in trying to limit their attendance to near the number I can treat in a day.

This letter is typical of the many that have come from both doctors and nurses and from the people themselves. In practically every county where the work has been done so far there have been more children asking for treatment than one doctor could handle properly. People have walked to these clinics from miles away. They have come in automobiles, ox carts, buggies, wagons, and not a few of the mountain people have come in from great distances on foot. Grandmothers who have never before seen a dentist, but who have come to their grandmotherhood through the various stages of toothache to toothlessness, have brought their grandchildren to the tooth "doctor" in order to have them treated. Old and young, men and women, black and white, have been given instruction in the importance of oral hygiene and in the care of the teeth. That the seed of information has fallen on good soil is indicated by the increased sale of tooth brushes, tooth paste, and other dental preparations in every lo-



Every child in this picture received treatment by one of the North Carolina traveling dentists through a Farm Life School located at Cary Wake County.

cality where the traveling dentists have worked. And the business of local dentists in nearby towns has been increased because the knowledge of the dangers coming from decayed teeth sends the older people to the practitioners in the settlements and towns.

### Precedes Permanent Work

One of the most important results of these free dental clinics paid for out of funds provided by the state, the county, and, in some instances, the International Health Board—the state paying more than 90 per cent of the bill—has been an aroused public interest in dental work for school children. This new interest is shown in the fact that some of the wealthier counties, which have full time health departments, have established free clinics of their own. This has been done in half a dozen counties already and others are getting ready for the work. The state aids in the payment of the dentist the first year and helps secure a man. After that the county pays the bill for the free dental office the year round, where school children of the county, rich and poor alike, may get free dental treatment at any time they make the arrangements with the dentist.

The medical inspection of school children revealed that in addition to those who had badly decayed teeth there were many who had diseased tonsils and adenoids. Of this latter class, 75 per cent or more were unable to go to a specialist, both because of the cost and because of their inaccessibility. This presented a much more serious problem for the Bureau of Medical Inspection, but the plan finally adopted has worked so well that since it was inaugurated more than thirteen hundred children have undergone operations by specialists provided for by the state Board of Health.

### Adenoid and Tonsil Clubs

Dr. Cooper and his helpers, with the aid of school teachers, form "Adenoid and Tonsil Clubs" in a number of the districts where these troubles are present in sufficient number to justify bringing a specialist from some city in the state to the rural community. The school nurses instruct the parents about the dangers of these diseases and encourage them to sign the cards for the clubs. When a sufficient number of children are secured for one of these clubs, arrangements are made for holding the clinic. A maximum fee of \$12.50 is charged for these operations, which is considerably less than 50 per cent



Dental work has just been completed for these children of Fontana School, Swain County. They are thirty miles removed from the nearest dentist, hence the dentist must be brought to them.

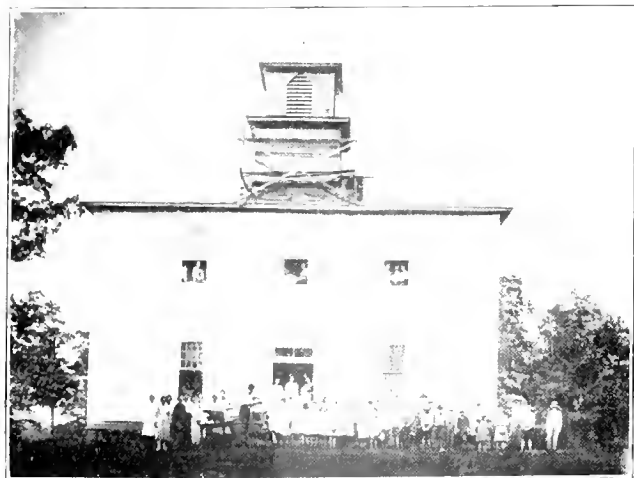
of the average fee for such operations in private practice. Provision is also made for the operation on some children without fee. In such cases the school nurse, the teacher, and the head of the department find out home conditions of children and simply make no charges for such operations, although the fact is not generally known among others who join the club.

The most eminent specialists in the state have been interested in this work from the very beginning. Arrangements were made to pay them a reasonable amount for their services—payment being made by the day and not by the case—and these men have been commandeered for a day or for several days to perform the operations on children concentrated at the temporary hospitals by the Board of Health workers. Here is a description of the way one of these clinics is conducted, as told by Dr. Cooper:

We fit out some place like an armory, or any building capable of being heated and lighted properly, where quiet and privacy may be had. The equipment consists of cots, sheets, blankets, towels, pus pans, hot water bottles, and such other necessary equipment as would be found in an emergency hospital. An extra room is fitted with a table to be used as an operating table, and a heater for sterilizing instruments is provided. All of this equipment is furnished by the State Board of Health, is the property of the Board and, when not in use, is shipped back to general headquarters, where it is kept as a portable hospital unit.

The children are required to come to the clinic without breakfast, and are put to bed after a final examination by the specialist. The operations are all done for the day for as many children as the operator may be able to take care of. The number done in one day by one man has varied from nine to twenty-three. The children are put to bed in the emergency hospital immediately after the operation and a trained nurse remains with them all night. As a rule, they are all able to go home on the day following the operation. Under no circumstances are they allowed to go home until the day after the operation. This rule is fixed, positive, and from it there is no appeal. If the child's parents will not allow it to remain in the emergency hospital the night after the operation, its case will not be accepted for the clinic; for the Board of Health will not assume responsibility for the operation if it does not have the opportunity of seeing that it gets the proper treatment immediately afterwards, or until there is no longer danger of complications.

The specialists are employed for the work by the day or by the trip, are paid by representatives of the Board of Health and have no worry or bother with the collection of the fees. When the clinic is over, they return to their homes having performed two, three, and sometimes four times as many operations for the fee as they would perform in private practice for the same money, but



The big white schoolhouse that sits on a hill in Macon County, back in the mountains. The dentist is at work, and the mountain children are there from miles around for inspection and care.

rejoicing in the fact that they have accomplished some real good.

"Bargain counter surgery" some of the few critics of the plan have called it; but the critics have been few and far between, for the success of the plan has more than justified the hopes of those who were responsible for its inauguration. Through it, a large number of children who could never get the benefit to be derived from the major operation necessary for the removal of tonsils or adenoids, have these troubles removed and are put on a par with other healthy children of the state. Through the working of the plan, 2,154 children in thirty-three counties of North Carolina have been operated on during the past twenty-two months. The operations in practically every instance have been highly successful, and with but few troublesome hemorrhages after the operation, and no complications. Only one death has resulted. That from local anesthetic in a patient, a fourteen year old girl, who had goiter.

Considered purely from the standpoint of finances, the conduct of these clinics in North Carolina has been a good money investment for the state. Had the twenty-one hundred operations been performed—and bear in mind the vast majority of them would not have been performed—in a hospital and paid for by private funds, it would have cost the parents of the children not less than \$135,000. As it was, the twenty-one hundred paid

approximately \$21,000 for the work. The state, of course, made an outlay of money; but the results have been well worth while, for the small investment by the state has resulted in a 600 per cent saving to the parents who had sick children, and has made it possible for these twenty-one hundred sick children to become well. Their tremendous physical handicap has been removed, and they have been put on an equal footing with the other children of the state. They will be able to learn more in school and their economic value to the state has been very much increased.

In addition to the economic value of this work already done, the experiments carried on by Dr. Cooper in putting this type of public health work on a permanent footing have opened up an entirely new field for public health service. The North Carolina board has been a pioneer in this work and has proved beyond the shadow of a doubt the efficacy of its method of handling this big job of solving the problem presented by the medical inspection of school children. Dr. Cooper, the Board of Health, and the legislators, who caught the vision presented by Dr. Cooper, believe the country generally will work out this proposition on the basis that the state owes the child the opportunity to improve its physical condition just as much as it owes it the opportunity to improve its mental condition. Compulsory health practice may one day parallel and serve to make more effectual our compulsory education.

## THE TYPHUS SITUATION

THE following authoritative statement from Surgeon General Cumming has been issued in regard to the typhus situation growing out of the discovery of typhus aboard vessels carrying immigrants to the United States.

The menace to this country from the introduction of typhus from Europe is not of recent development and is no greater today than it was six months ago. Even before the armistice the Surgeon General recognized the potentialities of the disease spreading to the United States if adequate precautionary measures were not taken when immigration was resumed. During the past year medical officers of the Public Health Service have been stationed at American Consulates at chief European ports of embarkation to supervise measures to be applied against ships and passengers for the prevention of the spread not only of typhus but also of plague and cholera. While the measures enforced at the European ports have by no means been perfect, their value is indicated in the fact that several hundred thousand immigrants have come from typhus infected areas on several hundred ships and that out of all this number, typhus infection occurred only on eight vessels. With the exception of the steamship *President Wilson*, which arrived at New York on February 1, infection on the ships was detected by the quarantine officer at New York and effective precautionary measures applied. Upon arrival of the steamship *President Wilson* at New York there were three cases in the sick bay of what the quarantine officers diagnosed as bronchopneumonia, but which later on proved to be typhus. The doctor was experienced in the detection of typhus, but the cases presented no eruption and the mistake was by no means inexcusable. Still under the custodial care of the immigration authorities, the sick people were sent to the Long Island College Hospital, which takes care of sick immigrants, and the correct diagnosis later became apparent. Fortunately, the error was dis-

covered before the other passengers in the steerage were released, and the vessel and the immigrants were remanded to quarantine and appropriate treatment applied to prevent the spread of the infection. The incident was unquestionably deplorable, but it indicated neither a breakdown of the New York quarantine station nor any unreasonable laxity.

The system of quarantine protection developed by the Public Health Service consists of a double line of defense, first the medical officers at foreign ports who supervise preventive measures specified in the United States Quarantine Regulations, and, second, the facilities at United States quarantine stations. If infection evades the first barrier, the ship still has to undergo inspection and treatment at her American port of arrival.

Several weeks before the arrival of the steamship *President Wilson*, the Surgeon General had taken very definite steps to strengthen the quarantine defense at European ports by having American consular officials instructed, through the State Department, to withhold bills of health from vessels whose passengers had not been satisfactorily disinfected. As early as January 17, quarantine officers at Atlantic ports were advised that on account of the unsatisfactory delousing procedure carried out at Danzig, all passengers arriving at their ports should be held in quarantine and



International.

Guinea pig inoculation is carried out with the blood of typhus suspects. The utmost precaution is used to detect and to prevent the spread of the disease.





International.  
The most dreaded of fevers, Typhus, is the object of especial care at ports of entry of immigrants from the centers of the infection.

although the latter returning from Europe are just as serious a menace from the typhus standpoint as is an alien. It is true that Ellis Island has always proved a valuable line of second defense for the port, but the responsibility for the exclusion of typhus and other quarantinable diseases rests solely upon the quarantine authorities. As a matter of ordinary decency and personal



International.  
Searchlight is thrown upon the agent that carries typhus. Twenty-eight out of 550 persons inspected were found to be infested with vermin.

treated for the destruction of vermin. It must, therefore, be evident to any fair minded person that the Federal health authorities have been most diligent in carrying out anti-typhus measures, and that any statement that either the federal health service or the state officials of New York have been derelict or indifferent to the typhus situation is obviously untrue. Nevertheless, administrative efforts of this sort cannot be expected to be perfect or to eliminate mistakes by individual officials.

Typhus is not transmitted by lice in general, but only by lice that have previously bitten persons infected with typhus. A louse is by no means an exotic insect, as one might infer by some recent press interviews. It is widespread throughout the United States, but is found chiefly in the slum districts of large cities. In the absence of typhus it is of no sanitary significance or danger so far as the present situation is concerned. Typhus fever develops in four to twelve days, and if cases do not develop within this period it can safely be asserted that the infection is not present. This applies particularly to overseas vessels that have been out twelve days or more.

Much confusion has resulted from the statements in newspaper interviews in New York City as to responsibility of the Immigration Service at Ellis Island for the exclusion of typhus fever. Immigration officials are not vested with any authority administering quarantine laws. Furthermore, they have no equipment for enforcing quarantine measures; naturally so because they have control over aliens and not over citizens of the United States,

hygiene, delousing facilities should be provided at Ellis Island, but since the prevention of the introduction of typhus relates to returning citizens as well as aliens, the quarantine station is the one place where effective preventive measures can be carried out.

## THE HEALTH OF THE TEACHER

The *Lancet* (London) of February 5, 1921, makes comparison between the health of teachers, as a class, in America and in England, quoting the results of an inquiry by Ralph Wager of the Department of Biology of the Northern Illinois State Normal School regarding the health of teachers, and the findings Dr. William Oldwright, of the Department of Hygiene in Toronto University, the former finding a high incidence of remediable defects, and the latter an inordinately high tuberculosis rate among teachers.

Teachers in England are a selected class, examination as to physical fitness being required prior to training, so that remediable defects are corrected and there is a weeding out of the unfit. Nevertheless, in England the mortality of the male school teacher under forty-five years of age appears to be below the standard, and the incidence of tuberculosis is very high, considering that these lives are selected on a health standard.

Dr. Hans Meirhofer found that in Zurich during the years 1912-14 found an equally unsatisfactory condition among teachers, the preponderance of maladies being nervous and respiratory affections. Dr. E. S. Yonge found pathologic throat conditions in 70 per cent of one hundred teachers examined in Manchester.

The remedy, says the *Lancet*, lies not only in a more rigid adherence to the comprehensive hygiene syllabus now required in English training colleges, but conditions of pay need to be revised, and the conditions of monotonous drudgery in unhygienic conditions need to have such attention as will render the teaching profession a more attractive one all round.



International.  
This is not a Ku Klux Klanner in his white robes, but a New York health inspector equipped to inspect the baggage of an immigrant.

# STANDARDS AND METHODS FOR HEALTH WORK AMONG CHILDREN OF PRE-SCHOOL AGE\*

By ROBERT D. CURTIS, M.D., BOSTON, MASS.

THE necessity for the continued supervision of the child beyond the age of infancy has been discussed at sufficient length to convince us all of its importance, and we are now confronted with the problem of developing a workable scheme for putting our convictions into practice. Infant welfare work has reached such a degree of development that procedure is relatively standardized, and information covering most of the phases of that branch of preventive medicine may be obtained from a number of books and periodicals and by observation of the working of a number of well established associations. Such sources of information with regard to work among children of pre-school age are not available. Given the case of a single child between one and five years of age, we are able confidently to make recommendations which we feel will put him in the best possible physical condition and maintain him there. With regard to the proper procedure with large groups of children, however, we are still uncertain.

We are engaged in developing a branch of preventive medicine which, from our present viewpoint, is the only unforged link in the chain of supervision that under ideal conditions should safeguard the welfare of the individual from the time of conception until death. Many of the links are as yet imperfect, but, beginning with prenatal care and extending through infant and child welfare, school hygiene, protection for the adult at work, at home and at play, to provision for the aged, the care of the child of pre-school age is the least well covered field.

The realization that it is our task to create rather than to copy should be a sufficient incentive for our best efforts, and this article is presented with the intention of offering suggestions in that field. Some of them are the result of experience in child welfare work, while others, unfortunately, have no such background to recommend them; but I shall not on that account hesitate to express them in dogmatic fashion. Even though they may later prove to be impracticable, they should at least serve as starting points for discussion. Further progress in this phase of work awaits crystallization of opinion on what to do and how it should be done.

Childhood may be considered to begin with weaning from the breast. Having passed through the dangers of infancy with the protection against environment afforded by his mother's milk, that protection is suddenly withdrawn, and the child faces a new group of dangers dependent on his increased activity and the new relations with his surroundings. After the period of breast feed-

*The weakest link in schemes designed to provide continuous health supervision for all the people all the time has been the period where infant welfare leaves off and school hygiene begins. The Child Health Conference fills this gap.*

*It is a noteworthy observation that in children regularly "graduated" from the infant welfare departments there is a marked diminution in the average incidence of physical handicap, which makes possible positive health promotion work.*

*It is here, then, that preventive measures may really become effectual. Whatever of intelligence and adaptability the child may acquire depends largely upon environmental conditions during this plastic period. Therefore it behooves us by all legitimate means to arouse the parents, interest the children, and prepare the workers to cooperate in a constructive health program.*

ing, environment assumes a greater importance and our area of supervision is proportionately widened. It is not enough to repair teeth, remove diseased tonsils, and rearrange the family budget to provide an adequate diet. We must insure that the back alley playground is free from refuse; that the nearby convalescent from diphtheria maintains quarantine; we may be required to take steps to investigate the ice cream vendor's cart, or insure that the father, who is a metal grinder, is protected from emery dust at his work.

Theoretically the ramifications of clues afforded by a single family would, if followed to their conclusion, result in an investigation of all human activities. Without attempting to discuss so Utopian a condition, we must bear in mind the fact that anything which affects the family for good or for evil has a corresponding effect upon the child. Supervision of the child requires close cooperation between various sorts of agencies, with the resultant danger of overlapping of effort and the wasting of time in investigation. This danger has been lessened by the development of the "confidential exchange," a central bureau where properly qualified persons may obtain the results of investigation by the various agencies which have already been interested. Without so convenient a means of checking up and correlating activities, waste of time and money is bound to occur.

## Pre-School Conferences Urged

We who make preventive medicine our profession have been many years in coming to a realization of the importance of pre-school age supervision, and it is expecting too much of the average mother, whose horizon is bounded by domestic duties, to have as clear a vision as our own as to her children's need for supervision. Through education and because of a healthy fear of depending on her own judgment, she seeks our advice with regard to her infant; but when infancy is past she feels entirely competent to deal with the every-day situations which concern her child. The situation is complicated by the fact that there is frequently at this time another infant who demands the greater part of her attention. The mother seems never to feel competent to trust entirely to her own judgment in dealing with her infant, whether it is her first or the latest of many. There is, consequently, no problem to maintaining the attendance at baby conferences. This, however, is not the case with conferences for older children, who are seldom brought to the conference spontaneously unless they show some obvious physical defects. Out of a great many children, I can recall hardly an instance where the mother has, of her own volition, brought her supposedly normal child for supervision.

\*Read before the Eleventh Annual Meeting of the American Child Hygiene Association, St. Louis, Mo., October 11-13, 1920.

If our conferences are to be well attended, we must devise means for inducing parents and others to send children to us. This can best be brought about by education of the community to the value of our work. This means, first, the education of the mother. Under ideal conditions all of the children of the older age would come to us as graduates of an infant welfare conference, and this imposes on the doctor and nurse of the infant conference an obligation to make sure that by the time the baby has reached the end of infancy he is ready, not for discharge, but for graduation to the conference for older children. The infant conference is our greatest opportunity for the education of mothers, for they have learned to look to us for advice, and to accept it with the assurance that it is valuable. Other members of the community, nurses, social workers, charitable organizations, hospitals, dental clinics, also need instruction before they will realize the value of sending well children for supervision. Widespread advertising, weighing and measuring campaigns, and "drives" for funds, are temporary expedients which lend impetus to a new organization and help to speed up one which is lagging, but their effect is only temporary, and they cannot have the far reaching results of an orderly and well planned scheme of community education.

### The Well Child Neglected

I feel confident that medical and social workers can readily be made to see the value of our work, and that they will cooperate accordingly; but observation bears out the statement that a great many, if not most, mothers will not be satisfied to bring their apparently well children to a conference merely for a physical examination and the advice that they should be taken to a dentist or a nose and throat clinic. There must be some activity in connection with the conference which will appeal to the mother as being of definite value to her child. This is a part of her education. If we adhere closely to our principle of doing purely preventive work, our choice of such an activity is limited. Tonsillectomy, adenoidectomy, and the repair of dental defects, are therapeutic measures closely related to our work; but they are, strictly considered, adjuncts. Vaccination, dental hygiene, and the maintenance of posture classes are preventive functions. Vaccination is usually under the direction of the local board of health, and is properly a function of that body. Its performance adds to the work of the conference doctor, whose time can be more efficiently applied, making it an undesirable activity in connection with our work. Dental hygiene may be made to exert a universal appeal, and its value to the community has been proved by the work done at Bridgeport, Conn. This is a desirable activity. Faulty postures of slight degree are the precursors of serious deformities in later life, but are seldom given the attention they deserve in a busy hospital clinics where more evident deformities abound. For our purpose I feel that their correction may be considered a preventive measure, and I am sure of the appeal which the posture class makes to the parents. With the establishment of dental hygiene and posture classes in connection with our stations, we can give each child something of definite value which can hardly fail to be appreciated and desired by the parents, and still limit ourselves to preventive work. Children of pre-school age are capable of being readily trained to cooperate in this sort of work if they are properly handled.

If, after convincing the mother that it is a desirable thing further to bring her child to the conference, we fail to consider the child's point of view, we shall still

have difficulty in getting him to come. The mother's viewpoint is partly a reflection of her child's and, if he finds nothing at the conference which makes it seem worth while to come again, he can object in so effective a manner that the mother will give up the struggle. During the period of waiting for examination, the services of a story teller, picture books, toys, and possibly a sand box, keep the children in good humor and make it much easier for the doctor to do his best work.

### Personnel of Conference Varied

There are several practical differences between the operation of conferences for infants and those for children. For the infant conference a single good sized room is often sufficient, but for the children's conference a separate examining room is necessary, since many of the mothers find it distasteful to have the defects of their children pointed out in public.

The doctor needs a special adaptability for dealing with children in regard to both training and personality. His recommendations for treatment and supervision are drawn largely from his own resources, for there are no available sources of reference for his problems, and the success of the conference depends in a large measure on his personality and his ability to maintain pleasant relations with the children. He must constantly keep in mind that the child's cooperation both in the conference and in the home is requisite to success, and that it can be secured only by unfailing honesty, truthfulness and kindness. A physician's gruff, offhand manner in an infant conference may deter a small number of mothers, but in the children's conference it results in no attendance in a surprisingly short time.

The physical examination of children is a relatively more important and more prolonged procedure than the physical examination of infants, and correspondingly fewer patients can be examined at a conference. During the usual two hour period from twenty-five to thirty infants can be examined with a reasonable amount of individual attention; but the examination of ten to fifteen older children occupies the same length of time. Examination of a well child should be done once in three months, and the examination of those below normal as often as is necessary.

During the conference the dietitian, or nurse, should be free to spend her time with the doctor, while an assistant—usually a volunteer—looks up records and supervises the undressing and weighing. A second person to interest the children by story-telling or playing games is of great assistance. In the Boston Baby Hygiene Association, we have made use of college students taking a household economics course and have found them very helpful. They are assigned to the conference as a part of their course, and are given a small number of families to supervise. Volunteers from a training school for kindergarten teachers have been used as story-tellers and play directors. The personnel of our conference, then, consists of a doctor, a nurse (or dietitian), a nurse's assistant, and a play director.

### Must Develop Preventive Workers

Under the present method of training preventive workers it is to be questioned whether the conference for older children should be in the charge of a dietitian or of a nurse. Considered from the viewpoint of efficiency, it is evident that if the nurse who has taken care of the infant continues the supervision through childhood, a considerable saving in time will be effected by making it unnecessary for a second person to win the confidence of the family and become acquainted with its social problems.

The supervision of the younger and older children of the same family by different persons is certainly a duplication of effort. With supervision continued after infancy the amount of work to be done by a welfare association increases at a surprising rate, making measures for greater efficiency correspondingly more necessary.

The training of the average dietitian is deficient in that she is unable to detect abnormal physical and hygienic conditions which are obvious to the nurse. The results of a physical examination frequently mean little more to her than a list of diagnoses whose significance she cannot quite grasp, and her management of these cases in the home is controlled by blindly following the doctor's instruction after the fashion of a conscientious, but untrained mother. She must of necessity neglect many opportunities for service because of her inability to recognize them. She has, however, a training in the management of the more complicated social problems of childhood and in the handling of difficult dietary problems, which the nurse lacks. In short, neither the nurse nor the dietitian, as trained at present, is entirely competent to supervise children from infancy to school age. If we are to have a single person take charge in both types of work we shall have to secure for her a broader education than is now given to either the nurse or the dietitian.

### Accessory Clinics Helpful

The number of physically defective children encountered in public schools is a measure of our laxity in child welfare work, and a classification of their defects may be used as a guide in determining what types of preventive work are most needed during the pre-school period. The following are the commonest defects found on examination of twenty million school children: Mental defects, 1 per cent; tuberculosis, now or in the past, 5 per cent; defective hearing, 5 per cent; defective sight, 25 per cent; diseased tonsils or adenoids, 15 to 25 per cent; deformed feet, spine, or joints, 10 to 20 per cent; defective teeth, 50 to 75 per cent; malnutrition, 15 to 25 per cent.

We have, then, to consider the following types of work:

(1) *Psychopathic*.—Except for a rare case of evident feeble-mindedness, few children of this age show a sufficient degree of mental defect to raise the question of their being sent to special schools. Occasionally, however, subnormal mentality is suspected from the knowledge of the parents, and in such a case expert opinion is helpful in giving us assurance that we are justified in handling the child as one of defective mentality.

(2) *Tuberculosis*.—Clinically active tuberculosis is also relatively rare. Infants who contract tuberculosis usually fail to reach the pre-school age and, while doubtless many children contract the disease between the ages of one and five years, it has seldom progressed far enough to be evident except on a most careful physical examination. That fact makes it important that the services of an expert should be available to pass on doubtful cases and those which have suffered known exposure. It is difficult to decide whether to be pleased or concerned over the small number of children who present a positive diagnosis. If, as has been maintained, a large proportion of initial infections occur in childhood, cooperation with a tuberculosis clinic is of first importance.

(3) *Eyes*.—Defects of vision, except those of marked degree and those resulting from corneal scars produced by an old keratitis, are seldom encountered. Visual defects begin to be evident after the child has entered school and may, except in isolated cases, be left to the school physician.

(4) *Ear, nose, and throat*.—From the above table we

find that from 15 to 25 per cent of school children have diseased adenoids or tonsils, and that 5 per cent have defective hearing. The latter defect, like defective vision, is usually discovered at school; but, unlike defective vision, its prevention in many cases is within our province through the removal of diseased adenoids. The treatment of conditions of the nasopharynx is one of the most important parts of our work, and its value is not to be minimized. The removal of hypertrophied adenoids is a very frequent and a very necessary procedure, but the criticism that has been applied to unnecessary tonsillectomy in private practice is equally applicable in our work. The removal of tonsils as a shot in the dark to improve the condition of a child who is below standard, may do more harm than good, and should be done only after serious consideration, no matter how great may be the desire to do something tangible. It must be conceded that the number of harmless tonsils we remove far exceeds the number of diseased ones that we leave in place. We should, however, have provision for the prompt treatment of these conditions when it is indicated.

(5) *Orthopedics*.—Deformities of the bones, spine, and joints are relatively frequent. A few are congenital in origin, but the majority are the result of rickets and of faulty nutrition. The latter class is another measure of the inadequacy of earlier supervision. It is a noteworthy sign of progress that these deformities practically do not exist among children who were under the supervision of an infant station during their first year. Their prevention is distinctly our individual problem, but under present conditions many of them are well established, and these as well as the cases of congenital origin require the service of an orthopedic clinic.

(6) *Teeth*.—Dental caries is by far the most prevalent defect found in children of all ages, and the dental clinic occupies an important place in our work. Here again the problem is partly concerned with infant supervision and the prevention of rickets. Rickets lowers the calcium metabolism just at the time when the permanent teeth, although unerupted, are forming their enamel. The first dentition is rarely defective except as a consequence of neglect; proper dental hygiene during the year before school, combined with whatever dental treatment may be necessary, should insure the preservation of the first teeth until their function has been accomplished, thereby avoiding the evil results of focal infection and malocclusion. The greater frequency of diseased tonsils in the presence of carious teeth is of itself sufficient reason for preserving the first dentition in good condition.

(7) *Nutrition*.—Improper diets are nearly as common as carious teeth. In many cases malnutrition is the expression of the effects of disease and readily disappears when concomitant diseased conditions have been corrected. There is in addition a class of cases where malnutrition may be considered as an entity, not dependent on other abnormal physical conditions. Under such circumstances the remedy is entirely dietary, and the services of an expert dietitian are needed to outline a suitable diet and to assist in rearranging the family budget so that proper foods may be purchased.

To sum up the phases which may be regarded as essential to our work, they are a tuberculosis clinic, an ear, nose and throat clinic, an orthopedic clinic, a dental clinic, and a nutrition worker. Even with these facilities we shall find occasional children who are subnormal, and who fail to show improvement under the closest supervision. In such cases a complete change of environment, if only for a week or two, will often give the needed impetus, and save months in getting the children into

proper condition. It is desirable, therefore, to have some means for providing a change of scene for this type. It is not always possible to maintain a farm or a camp at the seashore, but arrangements may often be made with a trustworthy family to care for a child during a short period, either for a small sum or for the expense of his maintenance.

### Mental Hygiene Also Important

Supervision of the child's physical welfare is our most obvious function, but through our close association with the mother in the conferences and in the homes we should take advantage of the many opportunities for the direction of mental hygiene and help to prepare the child for contact with his fellows by directing play and teaching discipline and the beginnings of work.

Clinics such as I have mentioned are usually available wherever there is a general hospital and, except for the nutrition work, are not a part of the welfare association. Most communities have also arrangements for taking care of cases of the acute infectious diseases when they cannot be properly isolated at home. When a child contracts measles, scarlet fever, or diphtheria, he may be cared for in the hospital, but, should he have whooping-cough, he is treated as a pariah by both physicians and laymen. This disease has a mortality of about 25 per cent during infancy, and is far more fatal at that time than is any other of the acute infectious diseases. Its mortality decreases considerably after the second year, but it is still a serious disease whose spread among the infants is dependent largely on child carriers. After the diagnosis of pertussis has been made it is the custom of most hospital out-patient clinics to refuse admittance again until the patient has entirely recovered. This one of the infectious diseases which carries the greatest mortality during infancy is allowed to go absolutely untreated. If, as most of us believe, there is value in the administration of pertussis vaccine, it should be made available to all children by the establishment of special clinics.

Transportation of children from homes to hospital clinics is often difficult to arrange, and requires the services of a worker whose time could be better spent in less routine work. The trip to the hospital can be made attractive to the children and the services of a trained worker spared by cooperation with a volunteer motor corps.

### Size of District Covered

The size of a district that can be effectively covered from a single station will, of course, vary with the density of the population. We have found that the maximum number of either infants or children that can be supervised with efficiency by a single worker is 175. Figuring on this basis, we may assume that if a single worker is to supervise a group of children from birth to five years, her maximum registration will be 175. If this number of children is evenly divided among groups of increasing age, we may expect 20 per cent of them to reach the age limit each year. On this basis the worker will be able to take on thirty-five new infants a year to supplant the children who have gone to school. It is impossible with our present meager data to set down a fixed rate of turnover for this work, for the birth and death rate vary considerably according to living conditions, nationality, etc. We should, however, be able to give each worker a fairly even age distribution in her group, since the number of families where there are two or three children under the age of five is about equal to the number of families where there is a single infant.

The supervision of our older children, as well as infants, results in the very rapid growth of an organization during the first years of the new arrangement. Without considering the normal yearly growth of an infant welfare station, the extension of care to the age of five years means that the registration will be doubled during the second year, trebled during the third year, and quadrupled during the fourth year. This does not necessarily entail a fourfold increase of all expenses, for the stations and part of the apparatus will serve for both types of conference. It does, however, mean fourfold increase in the number of workers, whose salaries are our greatest item of expense, and an increased expenditure for supplies. Few associations, however well organized, can meet such an increased expenditure, for most of us find that our present rate of growth is limited by our income. It will be necessary, then, either to spread our extended supervision thinly over a number of stations, or to limit the supervision of older children to a few stations, extending the work as our resources allow. From the standpoint of immediate benefit to the children, the former plan seems more effective, its application being limited to those children who need it most; but it is to be hoped that for purposes of standardization some of us will concentrate our efforts, if need be on only a single station. This will possibly be at the expense of the present pre-school age generation, but will react to greater benefit on the many generations to come.

### The Procedure Summarized

Briefly to summarize the foregoing statements: The procedure to be followed in the health supervision of older children differs from the established procedure for infants. This difference is mainly due to the increased importance of environment with the beginning of childhood; the need of the community, and especially of the mothers, for education; and the need of securing the children's cooperation.

The following subjects are those which now appear most worthy of discussion: (1) The maintenance of accessory clinics (posture, dental and nutrition). (2) The training of workers. (3) Frequency of physical examinations and reporting to conference. (4) Limit of registration for each station. (5) Methods by which the work may be extended.

### PLEA FOR DEFECTIVES

In the ungraded schools of New York City alone there are about fifteen thousand children, the term "ungraded" being used to designate mental defectives, mental retardation on the part of foreign children, or children otherwise handicapped. More special classes are needed, especially for a large percentage of congenitally deaf children who speedily reach the normal standard under proper instruction. In the interest of normal children the Children's Council Committee urges in their report that no mentally defective child should be in classes for normal children, and if capable of being trained in the public schools, these cases should be in special classes or special schools for defectives.

There are constantly 1,000,000 cases of active tuberculosis, with an annual death rate of 150,000. Profiting by the great crusade for better care and nursing, this rate has fallen since 1904 from 200 per 1,000 population to 145. There are 1,100 tuberculosis associations now at work, 613 sanatoriums, day camps and hospitals. Specially trained nurses are badly needed to care for them, to help in treatment, prevention, and research.

# VENEREAL DISEASES—EDUCATIONAL VS. SANITARY AND LEGAL MEASURES TO SUPPRESS

BY CARL SCHEFFEL, PH.B., M.D., BROOKLINE, MASS.

THE country having at last awakened to the prevalence of venereal diseases, sufficient enthusiasm has been aroused to give serious attention to this matter as a real public health problem. The United States Public Health Service and various other agencies are sitting up and taking notice, so to speak, of the serious advances upon our younger population venereal diseases have made, and measures are being sought to adequately combat this evil. In addition to the widespread establishment of venereal disease clinics as a curative measure, the greatest activity seems to be along educational lines. No sane person would question the great value of educational measures in diminishing these diseases, but the manner in which this education is distributed, and just who are most in need of it, are matters worthy of much consideration.

## Too Few Are Reached

At present, the bulk of this educational activity seems to be directed towards the education in sex matters of young men and women in school and college. Sex physiology, sex hygiene, and sex continence are strongly dwelt upon in much of this literature. These are admittedly all of the greatest importance, and yet, they serve only that portion of Young America who have enjoyed a reasonable degree of education. Educational literature that would effectively reach the comparatively uneducated factory workers who represent millions of our young men and women, is much less abundantly distributed and far less explicit in its teachings. At the same time it is known that the prevalence of venereal diseases is greatest among the less educated, and that it is this class which most imperatively needs prophylactic instructions.

It being understood that some of the chief channels for the spread of these diseases are a certain type of dance hall and lodging-house, amusement resorts, for-hire automobiles, etc.; then it becomes desirable that a little more propaganda should be directed toward these places and to those who patronize them. In addition to directing a little more educational activity towards the "younger sporty element," if I may so designate it, a survey of police activities in so far as they concern the enforcement of our moral and sex codes and the disposition of the offenders of these codes by many of our courts, would indicate that there is urgent necessity of first educating the guardians and defenders of our laws before their intelligent support in the campaign to suppress venereal diseases and the causes that lead to them can be anticipated.

This brings us to the legal and sanitary aspect of the situation. The possibility and logic of attacking this

*The scientific attitude presupposes the grouping of all the facts relevant to a situation and the formation of impersonal and unbiased judgment on the basis of carefully accumulated facts.*

*Conclusions reached in this manner bearing on health matters which have found expression in correlated action have resulted in the control of smallpox, in typhoid epidemics being regarded as disgraceful. Malaria and yellow fever are diseases which will soon be in the same category.*

*Results are not so immediate in disease prevention which requires individual instead of mass action. Laws generally are no more effectual than the people desire them to be, hence the necessity of educational measures to produce the efficient background of an enlightened public opinion in the matter of venereal diseases, which are most pressing public health problems.*

problem from a sanitary and legal point of view seems to be scoffed at as impractical by many who are interested in the suppression of venereal diseases. The potency of normal sexual passion and the alleged interference with personal liberty seem to be the chief bugbears that make doubtful in the minds of some the feasibility of utilizing our legal and sanitary codes as effective measures in diminishing these diseases. It is true, no amount of education, sanitation, or legislation will suppress normal sexual passion—neither is such a result at all intended

or even desired; but, when the fear of interference with personal liberty is expressed in connection with this work, the history of all successful sanitary undertakings of note needs to be taken into consideration.

All modern public health measures, to a greater or lesser extent, affect the personal liberties of those they involve. Compulsory vaccination against smallpox was perhaps the first universal example of successfully combating by sanitary measures a serious and widespread disease. The wonderful results that compulsory vaccination has achieved in the diminution of smallpox need no further comment. Was the interference of so-called personal liberty so big a bugbear in this connection that it could not be overcome? Even today there are thousands of individuals in all walks of life who do not believe in vaccination and who raise a huge cry before our legislative bodies that they "do not want their children inoculated with poisonous germs in order to send them to public school"; yet for the safety of the nation we cannot submit to these antagonists. If vaccination against smallpox were made a voluntary rather than a compulsory measure, in another decade thousands of cases of this disease would be encountered where we now meet an isolated one.

The successful completion of the Panama Canal was made possible only through the practical eradication of yellow fever and malaria from this district. When it was learned that the mosquito is the carrier of these diseases, were half-hearted legal or sanitary measures applied to exterminate their cause? Or was the personal feeling or liberty of the individual inhabitant taken into consideration in enforcing the necessary measures required to eradicate these diseases? Not much. Health in the Canal Zone was realized because this difficult task was given one man with supreme power to perform. Fortunately this man had the gumption to express and carry out his convictions until he became complete master of the situation. If a mollycoddle attitude of considering the personal liberties of the population had been assumed, these diseases would never have been eradicated and there would be no canal today.

We keep police forces in our cities because there is



always a minority of our population who, if left uncontrolled, will endanger the majority; and in practically every public health problem there is always a minority that will not respond to educational or other rational voluntary means to comply with the sanitary measures to solve the problem. Concerning venereal diseases, it is a moot question whether it is the minority or the majority that will respond to voluntary measures intended to diminish these diseases. If for no other reason, this alone would indicate that only through compulsory measures can we effectively combat this scourge.

The opponents of compulsion in this task have raised the argument that public opinion is against the employment of stringent means in suppressing venereal diseases and the causes that allow them to flourish. The truth of this may be granted; but public sentiment to a certain extent even up to the present time has been opposed to the compulsory vaccination against smallpox, and is probably antagonistic towards other public health measures. Public opinion, however, can be directed, and is being influenced every day by the daily press for partisan and other purposes. Why not use the press for the worthy purpose of aiding in the suppression of venereal diseases instead of simply letting it be the means of referring to venery and its consequences in a sensational manner?

### Why Fear Public Opinion

The country has been brought face to face with the cold fact that venereal diseases have become so serious a menace to the physical and moral well being of young Americans that our national efficiency is becoming endangered. Why not, then, look this menace squarely in the face and deal it the blow that it must get for the best interests of our country without taking into consideration the so-called personal liberties of that class of men and women who deem it their peculiar privilege to violate our moral and sex codes?

Laying aside all highbrow terms couched in prefixes and suffixes that lead the public to believe that the suppression of venereal diseases would involve the abridgement of personal liberty, is it not an absolute fact that the accepted moral and sex standards of our country do not condone sexual relationship outside of the matrimonial state, and that every state and territory in the Union has laws that make illicit intercourse a criminal offense? We know that far more than 90 per cent of all venereal diseases are acquired and spread through direct sexual contact, and that by far the greater majority of them are also acquired and spread through illicit sexual relationship. These are facts that nobody at all familiar with these problems can rationally deny. Where, then, does the fear of public opinion come in? Are we, as a great nation, to make laws and regulations governing our standards of moral and sex conduct and then deliberately fear the opinion of those who choose to break them? It would hardly seem that we have reached that stage of retrogression.

Who is it that rebels against the strict enforcement of our moral and sex codes that would lead to the direct suppression of venereal diseases; is it the clean living and law abiding citizen who has daughters of his own to protect, or is it the man and woman leading a life of double moral standards, or possibly financially profiting through the indirect sources that make the incurrence and spread of venereal diseases possible? The question requires no answer; nor do we need to fear the public opinion of this class of men and women, regardless of how numerous they are in any given community. They are, one and all, moral cowards, first because venereal diseases are—with the exception of the percentage that

is willfully transmitted to innocent and unsuspecting wives—acquired through dark and underhanded methods that will not survive the light of publicity; secondly, those who acquire and transmit them in this manner very well know that they are law breakers who endanger the public health and morals of the country. If we are really desirous of suppressing venereal diseases and their causes, public opinion or sentiment of those who spread these diseases are not to be feared; although they may be numerous, they have no moral or legal ground to stand on.

Educational measures are a very valuable means of aiding in the diminution of venereal diseases by laying a solid foundation for their prevention in the future, but strict enforcement of our sex and sanitary codes is the most important factor in suppressing these diseases where they at present flourish. The venereal problem has never been attacked in the same spirit or by the same methods as the eradication of smallpox, yellow fever, and malaria. For a long time we did not know the cause of the spread of these diseases and therefore could do nothing to prevent their transmission; but we do know the causes that make the incurrence of venereal diseases possible, we do know how they are spread, and we have already many well established laws on our statute books which, if they were properly and efficiently enforced, would greatly diminish the prevalence of these diseases. The segregation of prostitutes and other quasi legal and sanitary measures imported from foreign countries that have been tried out from time to time were futile and inconsistent. They proved entirely useless in the diminution of venereal diseases in the communities where they were tried out, because they deliberately encouraged the contraction of these diseases, and they were wholly inconsistent with American ideals and spirit because they directly condoned illicit sexual intercourse in flagrant violation of our laws which make this a criminal offense.

On the other hand, it is an absolute certainty that the strict enforcement of our moral and sex codes in any given community, together with adequate educational propaganda to arouse public sentiment, if carried out by one fearless, responsible head, would be an experiment resulting in great diminution of venereal diseases in that community in a surprisingly short period of time. During the war a somewhat similar experiment was tried in the vicinity of several large training camps, and proved quite successful as demonstrated by the low percentage of venereal diseases acquired by the soldiers of these camps. Then why not give the strict enforcement of our moral and sanitary codes a similar opportunity to produce equally splendid results among the civilian population in a given district? The task is by no means impractical or impossible if given an earnest trial and supported by Uncle Sam himself.

### ASSIST MEDICAL SCHOOLS IN EUROPE

The Rockefeller Foundation announces a cooperative program to assist medical schools in central Europe by aiding in the rehabilitation of scientific equipment; by enabling universities to secure medical journals, and by promoting investigation of English and American medical schools, by representatives of Belgrade University as guests of the Foundation, this last feature being undertaken with the idea that Belgrade is one of the strategic points where a medical school must be established in the near future. Further assistance will be given by lending a technical adviser and by providing fellowships in special medical post-graduate study for persons who may be under appointment or consideration for the faculty for the proposed school in Belgrade.

## CONFERENCE OF SOCIAL WORK

The next annual meeting of the National Conference of Social Work will be held in Milwaukee, Wis., from June 22 to 29, 1921. Subjects to be considered in the meetings of the Divisions on Health and on Mental Hygiene are as follows:

### Health Section

Cooperation and Coordination in Health Work.

(a) The National Council of Public Health—Organization and Program.

(b) National Council for Coordinating Child Health Activities.

(c) How Can Voluntary Organizations Best Cooperate with Health Officials?

The Health Program of the American Red Cross.

(a) The Social Significance of Health Centers.

(b) Cooperative Health Plan of the New York County Chapter.

(c) Public Health Nursing Program and Activities of the A. R. C.

Social Significance of Child Health Work.

(a) Education in Health Habits.

(b) What State Bureaus of Child Hygiene are doing to Promote Child Health.

Government Agencies in Their Relation to Health.

(a) The United States Public Health Service.

(b) The Children's Bureau.

(c) Department of Agriculture, Extension Service in Home Economics.

(d) Bureau of Education.

Joint session with Division I.

(a) The Undernourished Child—The Significance of Bringing him up to Standard.

(b) Where Should This Nutrition Service Next Be Centered; in the School Room; in the Child's Own Family, in the Home?

(c) How Much More may be Expected from Medical Service in the Public Schools?

### Mental Hygiene Section

Mental Hygiene Problems of Normal Childhood and Youth.

In Elementary Schools.

In High Schools.

In College.

Mental Hygiene Problems of Subnormal Children.

In the Public Schools.

In Institutions.

In the Community.

Mental Hygiene Problems of Maladjusted Children.

In a Public Clinic.

In School.

From the Teacher's Point of View.

From the Physician's Point of View.

In Institutions.

Educational Value to the Community of Mental Hygiene Agencies.

The Psychopathic Hospital.

Psychiatric Social Work.

Mental Hygiene Clinics.

Mobile Psychiatric Clinics.

The Basis of an Education.

What Teachers Want to Know About Mental Hygiene.

The Part Mental Hygiene Plays in the Solution of School Problems.

Speech Disorders in School Children.

It is anticipated that among those who will speak at these meetings will be: Dr. Donald B. Armstrong, Mr. Courtenay Dinwiddie, Mr. Sherman C. Kingsley, Mr. Philip Platt, J. Mace Andress, Dr. Ada E. Schweitzer, Dr. C. A. Pierce, Dr. Anna E. Rude, Dr. C. F. Langworthy, Willard S. Small, Dr. E. V. McCollum, Dr. Caroline Hedger, Esther Loring Richards, Dr. Frankwood E. Williams, Meta L. Anderson, Dr. William C. Sandy, Dr. Arnold L. Jacoby, Dr. Sanger Brown, Dr. Herman M. Adler, Dr. William F. Lorenz, Mary C. Jarrett, Dr. Douglas Singer, Dr. Stewart Paton, and Dr. William A. White.

The Conference will hold its meetings in the Auditorium, which is the most remarkable building of its kind in the United States. It has all the requirements necessary for the ideal convention hall, ample seating capacity, perfect appointments, accessibility and adaptability, abso-

lute safety, complete accessories in the shape of wardrobe, toilets, telegraph and telephone, storage accommodations with ample provision for exhibition space, banquet and assembly rooms, and committee rooms. It occupies an entire square just north of the main thoroughfare of the city and is readily accessible from all railway stations and interurban lines and forms the nucleus for the projected civic center of the city of Milwaukee.

The main auditorium is constructed without a single pillar or post to obstruct the view. It is located on the ground floor, and all parts of the hall may be reached from the street without ascending stairs. It has a flexible seating arrangement so that from five to ten thousand persons can be comfortably seated, and the acoustic properties are exceptionally good. All meetings of the Conference, both general and divisional, will be held in this one building. In addition to the great General Assembly Hall, there are four other large halls seating from 900 to 1,200 persons each. This will be the first time in the history of the National Conference that all the meetings could be held under one roof without crowding or inconvenience.

Milwaukee in June is an ideal convention city, located as it is on the shore of the lake, with ample parking and beach facilities. No section of the city is without a public park within ten blocks of it. Over 1,200 acres, all connected by a boulevard system, constitute the park system of this great city of the central west. In addition to its parks, the city has forty public playgrounds.

There are daily boat lines with large steamships from Chicago, and from cross lake ports. It is possible for visitors to come to Milwaukee by all lake line from Buffalo or by part way lake travel from Chicago, Detroit, Grand Haven and other ports. The Chicago North Shore Electric Road operates hourly trains from North Evanston.

Hotel accommodations are ample, as has been proven by the fact that Milwaukee has entertained so many large conventions in the past few years.

A large number of allied organizations will hold meetings in Milwaukee either immediately prior to or during the week of the National Conference meeting. Among these allied organizations will be: The Lutheran Inner-Mission Society, Social Service Department of the Protestant Episcopal Church, Public Health Nurses' Association, the National Urban League for Social Service Among Negroes, the Jewish Conference of Social Welfare, the Canadian Conference of Public Welfare, Foreign Community Workers, National Board of the Y. W. C. A., the National Association for Community Organization, the American Association of Hospital Social Workers, the National Federation of Day Nurseries, Interstate Conference on Education of Backward, Truant, and Delinquent Children, American Association for Organizing Family Social Work, National Children's Home Society, National Child Labor Committee, and National Travelers' Aid Society.

### FAVILL MEDICAL LABORATORY

The medical friends of Henry Baird Favill of Chicago are raising a Foundation, the object of which is to establish the Henry Baird Favill Memorial Laboratory. Dr. Favill was a pioneer in the field of preventive medicine and his whole career was devoted to an effort to conquer disease by preventing it, and this for the double purpose of preventing possible disease and in conserving the essentials of community values by bringing life to a higher level for every individual. A laboratory such as outlined by the Foundation is considered to be a fitting expression of Dr. Favill's life work.

# PUBLIC HEALTH NURSING

## Industrial, Social, School, and Rural Nursing, Maternity Care, Child Welfare

KATHERINE M. OLMSTED, R. N., *Editor*

### HEALTH AGENCIES UNITE

A most important move in the direction of coordinating the health activities in the United States has been initiated as a result of a conference held in Washington, December 10, 1920, whereby the National Health Council has been organized and the following officers elected: Chairman, Dr. Livingston Farrand, chairman of the Central Committee of the American Red Cross; vice-chairman, Lee K. Frankel, of the American Public Health Association; recording secretary, Dr. C. St. Clair Drake, of the Council of State and Provincial Health Authorities. The election of treasurer was deferred until further consideration could be given to the whole question of financing the project.

The following list of activities has been approved as indicating the legitimate field in which the Council may function: (1) A special information bureau, (2) a legislative bureau, (3) the coordination of health activities, (4) periodic joint conferences, (5) a statistical bureau, (6) the development of educational health material. In accordance with the by-laws adopted by the Council, each member of the organization has appointed one representative and one alternate. The original members, with corresponding representatives and alternates, the representative being the person first named in each instance, are as follows:

American Public Health Association, Dr. Lee K. Frankel, Dr. M. P. Ravenel. American Red Cross, Dr. Livingston Farrand, Dr. E. A. Peterson. American Social Hygiene Association, Dr. William F. Snow, Mr. Bascom Johnson. Council of State and Provincial Health Authorities, Dr. C. St. Clair Drake, Dr. E. R. Kelley. Council on Health and Public Instruction of the American Medical Association, Dr. Watson Rankin, Dr. Frederick R. Green. National Child Health Council, Dr. Philip Van Ingen, Mr. Courtenay Dinwiddie. National Committee for Mental Hygiene, Dr. Thomas W. Salmon, Dr. George K. Kirby. National Organization for Public Health Nursing, Miss Edna L. Foley, Miss Mary S. Gardner. National Tuberculosis Association, Dr. Charles J. Hatfield, Dr. J. Alexander Miller.

The by-laws provide that "other national health organizations may hereafter be elected to membership by two-thirds vote of the members." Provision is also made for advisory or conferring, as well as directly participating, members. The International Health Board probably will, together with official agencies such as the United States Public Health Service, be associated with the Council in this capacity.

An official statement issued by the officials of the Council says: "The Public Health Council, representing as it does many prominent national health agencies, should

serve as a valuable clearing house and coordinating center, in many fields where common functions are performed. It aims to be an integrating force among independent autonomous agencies, rather than a merger of such agencies into one organization. It should increase the economy and effectiveness of operation, should eliminate duplication of effort, and should enhance opportunities for sympathetic and constructive public service. Such a movement, through its membership, and through a mutually helpful relationship with the state and local voluntary health agencies, should effectively serve the declared object of the National Health Council, which is: "the betterment of health work in the United States."

### OKLAHOMA NURSES' INSTITUTE

A two day public health nurses' institute attended by about forty public health nurses from all parts of the state was held in Oklahoma City, February 18 and 19 under the direction of the Oklahoma Public Health Association. These gatherings are held three or four times each year for public health nurses employed by all organizations, and have been found eminently successful, not only in imparting much useful knowledge and information, but more especially by giving the nurses a broader outlook on the field of public health, encouraging those who are laboring in pioneer communities.

The institute consisted of lectures, round table discussions, and demonstrations. Following is an outline of the program: "Development of Public Health Work in Oklahoma," Jules Schervitz, general secretary, Oklahoma Public Health Association; "Coordination of Public Health Nursing in Oklahoma City," Miss Margaret Howard, superintendent, Oklahoma City Public Health Nursing Association; "Health Program Before the Eighth Legislature," Dr. A. R. Lewis, state health commissioner; "Consultant Tuberculosis Service," Dr. L. J. Moorman, president, Oklahoma City Anti-Tuberculosis Society; and "Health Crusade Tournament," Miss Henriette Hart, Crusader executive, Oklahoma Public Health Association.

A school nursing demonstration was held under the direction of Miss Anna Stanley, school nursing supervisor of the Southwestern Division American Red Cross, and the round-table was led by Miss Rosalind Mackay, state director of public health nurses. The meeting was featured by an inspection of the open air school and by an exhibition of health films, also a plea for recruiting of student nurses by Miss Ethel G. Pinder, director of division of nursing, Southwestern Division American Red Cross. Mrs. Bessie McColgin, the only woman member of the Oklahoma House of Representatives, delivered an excellent address on women's and children's legislation.

# CHILD HYGIENE ACTIVITIES IN GEORGIA

BY DOROTHY BOCKER, M.D., DIRECTOR, DIVISION OF CHILD HYGIENE, GEORGIA STATE BOARD OF HEALTH,  
ATLANTA, GA.

THE activities of the Division of Child Hygiene of the Georgia State Board of Health are similar to those of other divisions of child hygiene, although the particular method of carrying these out, the particular order of precedence and stress given the points are different. The Division has as its object: (1) proper prenatal care of the child, (2) proper postpartum care of the mother and child, (3) registration of the child's birth, (4) proper care of the infant and pre-school age child, and (5) a physical examination and follow-up work for every school child in Georgia. Some of these plans are being carried out, while others are still being organized. The Division is so new—having but six months' work to its credit—that some of the plans have not been initiated, that the work is not as broadly in effect as it will be in a year or two, and that some of the organization is still in its most rudimentary form. The child hygiene work will eventually be carried on by the county commissioners of health, who are full time health officers, but who number only twenty at the present time. The problem is at present, therefore, a two-fold one, (1) presenting the work to the county commissioners of health, and (2) the more difficult task of getting the work across in those counties that have no health organization. It is an interesting commentary, by the way, that commissioners of health are, as a whole, conversant with problems of water supply, sewage disposal, epidemic control, venereal disease, etc., but know very little or nothing about child hygiene or the organization of this work; and, what is a sadder reflection, the usual medical school has little in its curriculum to supply the need.

The first phase of the work—that of the prenatal care of the mother—will eventually be handled by the prenatal clinic. Very little, if any, prenatal work is being done, as yet, in Georgia; it is work most difficult to handle in southern communities. To force the issue before other phases of child hygiene have been accepted and established, or in places where other forms of public health work are still in the balance, would only result in failure. However, a start will be made within the next year.

The care of the mother during labor is receiving the following consideration: plans for educating the midwives and, after a year or two, the use of some form of certification, are under way, as also are plans whereby a suffi-

cient quantity of 1 per cent silver nitrate solution to last the general practitioner a year is to be supplied to the physicians and midwives at a cost of 21 cents; this will make compliance with the "Act for the Prevention of Blindness" easy.

A pamphlet on Birth Registration has been sent to some five hundred organizations and publications; this gives a brief résumé of the history of birth registration, reasons for birth registration, etc., and finishes with the following: "There is a registrar in your registration district.

If you do not already know him, find out who he is. See that all concerned do their full duty with reference to birth registration." Georgia is not yet in the birth registration area, but it is hoped by such measures that she will be shortly. In addition, each physician has been supplied with as many form postal cards as he can use; the postals require him to fill in all the facts with reference to the newborn child, in return for which the mother has sent to her the Baby Book; the returned cards are then turned over to the Bureau of Vital Statistics and there records are checked up.

The Georgia Baby Book has been distributed throughout Georgia by the physicians, nurses, mothers' clubs, and other interested agencies. In addition, for the infant group, there are diet slips,

similar to those included in the Baby Book, that the mother can pin to the kitchen wall; these are for the bottle-fed baby, directions to the mother of the breast-fed baby, diet for the twelve to eighteen month old child, for eighteen to twenty-four month old child, for two to three year old child, and for the three to six year old child.

The Children's Health Centers are extremely valuable aids; usually in the rural districts the commissioner of health meets the infant and pre-school children every other week or only once a month in winter, but more frequently in the summer. In the town the center is open once a week; in the cities there are usually enough applicants to justify opening for several days. These centers are initiated and organized by the county commissioners of health, the women's clubs, the Parent-Teacher Associations, nurses, etc., receiving aid, especially along the lines of propaganda and finances where needed, from the Rotary Club, the Chamber of Commerce, etc., the various physicians of the community contributing their professional services. In places where a pediatrician is em-



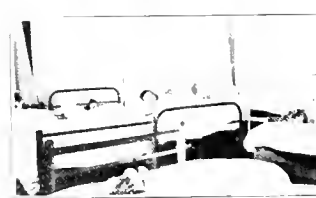
A typical group of workers, some needed, but all eager to serve.



A group of candidates for the Tonsil and Adenoid Clinic.



Improved wards cared for the children over night, and attendants gave proper supervision.



Flowers and ice cream are the order of the day on the morning after operation.



Proper follow up makes the work effective.



Home the next morning, cheerful and happy.



## POPULATION AN ECONOMIC INDEX

THE noblest and most difficult art of all is the rearing of human thoroughbreds, said Dr. Edward J. Kempf<sup>1</sup> in addressing the International Conference of Women Physicians in 1920. The crux of the whole matter is contained in the inheritance, vigor, and nurture that we give our children. Whatever the immediate motive of commiseration, conservation, or uplift that urges welfare work and promotes agencies for the more or less scientific supervision of mothers and their young children, the organized effort to protect the infant and to insure the welfare of the mother is an admission that the natural growth of population has not been maintained. The lowered birthrate which has undoubtedly been one of the factors leading to recent activities to secure the preservation has not been confined to one people, but has occurred in most civilized countries. Recent analysis has been made by Ballantyne<sup>2</sup> of a study made in England, Scotland, Wales, and Ireland, concerning itself with the extreme and persistent fall of the legitimate birth rate in the United Kingdom; the influence of antenatal disease and death in the decline of the birth rate; the contemporary movements of population and the proportional distribution of the sexes; the economic problems of parenthood; the housing situation in its bearings on parenthood; venereal disease as the chief cause of sterility and degeneracy; the increased industrial employment of women of child-bearing age; and the differential and qualitative aspects of the present birth rate. Appraisal is made of the constitution and uses of the Ministry of Health as an instrument of racial reconstruction, and the recommendations of the Commission include a census to be taken immediately after the war, together with the establishment of a permanent anthropometric department in the Ministry of Health.

Voluntary restriction of the birth rate is considered as one of the most important causes of the lowered birth rate. This phase of the subject is discussed pro and con from ethical, medical, and economic viewpoints, with the general conclusion it is the plain duty of society to remove the disabilities which, without any fault of the individuals concerned, may be imposed upon worthy parenthood.

They place great emphasis upon fertility in the different strata in the population. "The differential fertility of the least prosperous and successful classes is seen to be a new feature . . . of the birth rate situation, and we can no longer argue that it has probably been proved by experience to be compatible with rational advancement and prosperity." State aid of some kind is argued for the endowment of motherhood or of parenthood. The whole report is a document of immense importance. The matters considered have ethical and religious as well as medical and obstetrical aspects and, while the Commission came to no close agreement, the third section of the Report is wholly constructive and seeks to retrieve the great losses to population because of deaths before and immediately after birth. The amelioration of antenatal, intranatal, and neonatal deaths is rightly regarded as in the sphere of the maternal section of Mother and Child Welfare. The influence of syphilis and alcohol as "racial poisons" is not forgotten.

Another angle of this important subject is given by Glaister<sup>3</sup> in discussing Malthus and the Poor Law. Malthus laid down the following principles regarding the growth of population: (1) Population has a constant tendency to increase beyond the means of subsistence. (2) Population, when unchecked, has the power to double itself every twenty-five years under the most favorable circumstances; and (3) that means of subsistence increased by

arithmetical ratio, while the population increased by geometrical ratio. His object was to show that: (a) population is necessarily limited by the means of subsistence; (b) that population increases where these means of subsistence increase, unless prevented by powerful and obvious checks; and (c) that these checks and those which repress the superior power of population were resolvable into: (1) vice, (2) misery, and (3) moral restraint; further (4) that it was the duty of the statesman to discourage and diminish the former and to encourage the latter.



Kadel & Herbert. This happy youngster smiles because he is being properly taken care of by the Diet Kitchen (New York).



Kadel & Herbert. Thorough physical examination and adequate medical supervision are necessary adjuncts in dietary management.



Kadel & Herbert. Advice as to proper food is supplemented by an actual demonstration of how to prepare the food for infants and children.



Kadel & Herbert. The nurse is demonstrating sanitary methods of caring for the babies' bottles. The whole family is interested in the process.

1. Kempf, Edward J.: Physical Basis of Personality. Proc. International Conference Women Physicians, iv, p. 52.  
2. Ballantyne, J. W.: Edinburgh M. J., 1921, January, p. 551, on the Second Report of England's National Birth Rate Commission.





Kadel &amp; Herbert.

A society milk station where the children come daily for the milk supplied as a necessary addition to insufficient diets.

On its economic bearings, Malthus said, "Hard as it may appear in individual instances, dependent poverty ought to be held disgraceful," and he held that society and the government which presides over it are without any direct power to remedy it. As to disease, he said: "Diseases have been generally considered as the inevitable inflictions of Providence; but perhaps a great part of them may more justly be considered as indications that we have offended against some of the laws of Nature. . . . The human constitution cannot support such a state of filth and torpor; and as dirt, squalid poverty, and indolence are in the highest degree unfavorable to happiness and virtue, it seems a benevolent dispensation that such a state should, by the laws of Nature, produce disease and death as a beacon to others to avoid splitting on the same rock. In the history of every epidemic it has almost invariably been observed that the lower classes of people, whose food was poor and insufficient, and who lived crowded together in small and dirty houses, were the principal victims."

Wholly illuminative on the side of remedial measures and constructive in its tendency is the discussion of Sir Arthur Newsholme<sup>4</sup> before the Philadelphia Pediatric Society of Philadelphia in 1920. He considers the birth rate in its relation to infant mortality and analyzes in-



Kadel &amp; Herbert.

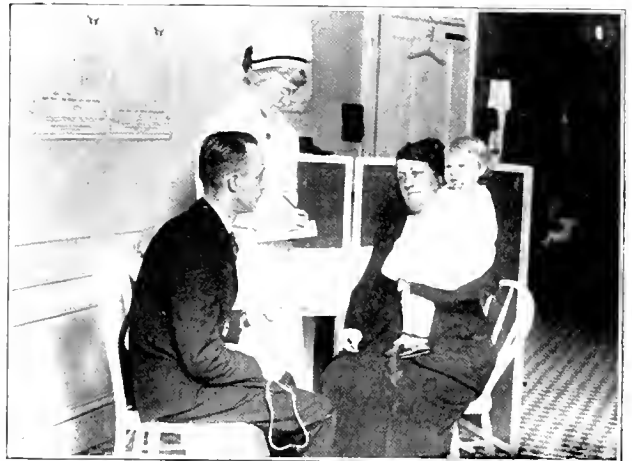
The welfare of the mother lies largely in her own hands, provided that economic conditions favor her care, and that she is properly instructed when help is required.

3. Glaister, John, M.D.: Malthus and the Poor-Law, *Lancet*, Lond., October 23, 1920, p. 876.

4. Sir Arthur Newsholme: Neo-Natal Mortality, *Lancet*, Lond., May 22, 1920, p. 1097.

fant mortality as part of the general mortality of all ages. The primary objects of preventive medicine, he says, are to transfer as many deaths as possible from the earlier to the later periods of life, to prevent the larger mass of non-fatal illness which, from the point of view of the community, is even more serious than early deaths, and to raise the general standard of health of the population.

At least one-tenth of the total deaths at all ages occur in infancy. The most fertile field for preventive work is in the neonatal period. The discussion outlines what is being done by health authorities and what it is desirable to do generally in order to enable every mother to have the best care which modern medicine renders available. The care of the mother and the newborn infant should not be separated from general medical care on the one hand, or from general public health administration on the



Kadel &amp; Herbert.

Social preventive pediatrics devotes itself to helping the child in health by recognition and care of minor defects or ailments while they are still amenable to treatment.

other. Prenatal clinics should connect with postnatal clinics, the provision of maternity homes and hospitals, and periodical supervision of the mother and her children. At every point the physician will be needed, and departments of public health work must be called in aid.

S. P. M.

## RELIEVE NURSING SITUATION

The great shortage of nurses that has been threatening the hospitals of New York City is being met in a unique way by women who in ordinary life belong to the leisure class. Two hundred volunteers have been organized by the New York County Chapter of the Red Cross, and placed on duty in fifteen of the largest hospitals.

By taking over such tasks as washing patients, wheeling them to and from the operating room, making beds, checking laundry, and taking the histories of patients, they are releasing scores of nurses for more difficult duties. A large number of women who took Red Cross courses in home nursing during the war are acting as nurses' aides, doing practically everything the nurse does in the wards except give medicine.

Red Cross workers have also taken over the making of surgical supplies and hospital garments in a number of the hospitals. Though they receive no pay for what they are doing, many of them give full time. Others give two or more afternoons each week. New volunteers are coming in at the rate of fifty a month.

Once insure that the air in a house is stagnant, and sickness is sure to follow.—Florence Nightingale.

# PROBLEMS IN SOCIAL MEDICINE

## Medical and Health Education, Child Welfare, Social Insurance, Rehabilitation, Medical Law and Allied Subjects

JOHN A. LAPP, LL.D., *Editor*

### HOOKWORM INFECTION IN THE ARMY

RESULTS of an interesting investigation into one of the war medical problems appear in the first issue of the recently published *American Journal of Hygiene*, dealing with the relationship of infection by hookworm to the incidence of morbidity and mortality in the army. Of 22,842 men examined at a certain camp, 3,014, or 13.5 per cent, were found to be infected with hookworm though the greater part of the infections were light and without clinical symptoms. The purpose of the study was to determine the increased burden of morbidity and mortality due to the presence of hookworm infection. Does hookworm infection influence the severity of infectious disease; does it increase a susceptibility to disease; and what influence has it on army efficiency?

The extent of morbidity can be measured by the number of sick calls and the number of hospital admissions per man during a given period. Quoting from the report,<sup>1</sup> "Among the 13.5 per cent positives there was an increase of 27.9 per cent in men sick. Hospital admissions are 76.5 per cent higher in positives. . . . and sick calls show 86.6 per cent increase among hookworm hosts." While the increase of men sick is 27.9 per cent, the increase in hospital admissions is 76.5 per cent, indicating an increase in severity of disease among positive hookworm cases, as compared with so-called negatives. Ten organizations having more than 10 per cent hookworm infection had a mortality rate of 1.5 per cent, or 87 per cent above that of seven others with lighter infection, whose average was 0.8 per cent. As concluded by the authors of the study, "Sickness, whether mild or severe, acute or chronic, is increased among the men who are weakened in general health by hookworm infection."

The available data do not show that hookworm is responsible for an increased susceptibility to particular diseases, though a small percentage of increased incidence of tonsillitis, laryngitis, measles, bronchitis and pneumonia is noted among the positive cases. The incidence of tuberculosis is decreased, but this is probably due to the elimination by draft boards of men giving clinical evidence of hookworm plus active pulmonary tuberculosis. A striking fact is the increased mortality from pneumonia among the positive cases. For example, a 284 per cent increase in a certain regiment in the rate of infection by hookworm above that of the rest of the division was accom-

panied by a 325 per cent increase in the mortality from pneumonia in that regiment.

Intellectual inferiority is frequently associated with hookworm infection, though such inferiority is doubtless the result of a vicious circle of factors, of which hookworm is but one. From the standpoint of economy and efficiency, it is the opinion of the authors that the elimination of hookworm infection as a soldier enters the service would be more profitable than to allow him to continue untreated.

### ETIOLOGY OF YELLOW FEVER

NOTABLE among recent scientific accomplishments is the isolation of *Leptospira icteroides* by Noguchi<sup>1</sup> of the Rockefeller Institute, and its designation as the specific pathogenic agent in the etiology of yellow fever. With his characteristic sound bacteriological procedure, Noguchi has cultivated this organism from yellow fever cases in Guayaquil, Merida, and Peru. The properties of *Leptospira icteroides* agree with the well known properties of the yellow fever virus and, when carried by the *Stegomyia* mosquito and transmitted to another host, can reproduce the disease. Agglutination and other immunity reactions of the organism also indicate its specificity in the causation of yellow fever.

Epidemic yellow fever is on the wane, though the disease appears in endemic form in Yucatan in Mexico, Guayaquil in Ecuador, in the Amazon river region, and on the west coast of Africa.<sup>2</sup> The chances for an epidemic of yellow fever in this country are extremely remote, principally because our seaport cities do not furnish *Stegomyia* females necessary for transmitting the disease from one patient to another. A vigorous anti-*Stegomyia* campaign such as was waged by Gorgas in Panama can prevent the spread of the disease and ultimately bring about its control, since the virus exists in the patient's blood only a few days. Yet there is always danger of the introduction of new infectious material, and if the sanitary measures have been lifted or slackened, a recurrence of the disease is possible. The campaigns waged so successfully in Havana and Panama can be imitated in any community with modern public health machinery, though far more difficult of accomplishment in thinly populated regions with undeveloped sanitary organization.

Without the knowledge of the causal organism, no at-

1. Kofoid and Tucker: On Relation of Hookworm Infection to the Incidence of Morbidity and Mortality at Camp Bowie, Texas. *Am. Jour. Hygiene*, 1921, i, No. 1, p. 79.

1. Noguchi, Hideyo: Recent Experimental Studies on Yellow Fever, *Am. Jour. Hygiene*, 1921, No. 1, p. 118.

2. Banus, M. Garcia: Noguchi's Yellow Fever Research, *International Jour. Public Health*, 1921, ii, No. 1, p. 50.

tack on the seed-bed of the disease is possible. Noguchi was able to isolate the organism from the virus in the patient's blood as late as the sixth day after the onset of symptoms, whereas our prophylactic measures have assumed the virus not to exist beyond the third or fourth day. This discovery will influence the sanitary regulations for the control of the disease and the precautions

observed during the infective period will have to be prolonged.

With the isolation of *Leptospira icteroides*, efforts can be directed to the preparation of a serum for purposes of treatment and prevention. Such studies are already under way and final victory over this deadly enemy of mankind is in sight.

## PEACE POLICIES IN REVIEW

By MARION L. STEIN AND BLANCHE W. THATCHER, PHILADELPHIA, PA.

IT WAS for the purpose of an efficient coordination of general health activities that at the close of the war the Federal Public Health Service asked the assistance of the American Red Cross in planning a program of preventive and educational work. As this was of such wide scope, it would of necessity include the reconstruction of the ex-service man and his family. This governmental department followed the same course it had always taken, namely, that of stimulating the state work along these lines. But it soon came to a realization of the fact that to be progressive it must profit by experience such as inevitably falls to the share of an organization like the Red Cross during a war emergency. When we consider the ravages made by four years of war, famine, disease, and disaster in Europe, and the consequent reaction in the United States, incidental to immigration from there, the task may well be considered as illimitable. This was early recognized by men of the most scientific intellects. The result was the world movement for the conservation of health, organized at the Geneva Council by the League of International Red Cross Societies. A program was devised that saw not only the control of disease and epidemics, but the significance of focusing the attention of the nations upon posterity. It carried a special message to Youth.

In these days, so near the havoc wrought by war, no problem of child life could be considered without dealing with the offspring of those most closely affected by that war. Most of the young men enlisted in the service of the nation were of marriageable age, either having already assumed or being about to assume parental responsibility. Their children were brought into the world during a period of anxiety and emotional stress when many of these men were disabled and their vitality at its lowest ebb. Is it not therefore reasonable to feel that this work is not a specialized task for the government alone, but rather the individual responsibility of every member of the community? All available sources must be utilized—federal, state, municipal, public health work, and education.

### Aftermath vs. After Care

It was the privilege of the American Red Cross representative placed by the Home Service Section of the Southeastern Pennsylvania Chapter in the District Supervisors Office of the United States Public Health Service for the medical care of the soldier to interview most of the young men applying to the government for physical examination and compensation during the first year of the reconstruction period. The tide of popular sentiment was still at high water mark. The misdirected but kindly efforts of the unskilled were so much in evidence that the so-called "hard boiled" methods were considered the only antidote by federal agencies. Frequently as much damage was done in the one direction as in the other. The

martial severity that discouraged any unspartanlike attitude on the part of the overseas soldier left its mark and made its reappearance on home soil. These men made a very earnest effort to rehabilitate themselves without government aid. It was often found difficult by Red Cross workers outlining war risk rights to persuade them to apply for their just dues. This is not said in disparagement of the home army, but rather in explanation of the attitude of the overseas army. The constant association with the Allied troops could not fail to make our men emulate the stoicism with which they met the continuous hardships, the trench-life monotony, the numerous deaths, and the appalling gloom of a nation in mourning. To them "disability" was synonymous with "failure"!

The first year of the reconstruction period was largely influenced by the Washington policy of urging the men to file their claims promptly, assigning a time limit of one year for eligibility. It is to be regretted, though probably condoned, that the emergent character of this phase of the work obscured the vital issue. It laid the emphasis on remuneration for services rendered and failed properly to provide adequate means for restoration by highly standardized methods of medical diagnosis and treatment. During the second year of the reconstruction period the hastily organized machinery has been considerably improved. At present the government has made provision in all United States Public Health Service Hospitals for sufficient medical personnel and occupational therapeutics. Medical and psychiatric social workers have been placed there by the Red Cross. There is still, however, a dearth of the latter, particularly in the psychiatric group.

This simplifies the problem of the man who is willing to accept hospitalization, but it does not make less complex the situation so far as the ambulatory cases are concerned. By "ambulatory" is meant those men whose physical condition was such as to make regular work impossible, but whose handicaps were not the kind to warrant retaining under the government. These needed continuous "follow up" home care and hygiene, not yet adequately provided. In fact, one of the disadvantages of medical service in its relation to state and federal health insurance has always been its failure to take an active and aggressive part in campaigns against disease and their prevention. Here indeed is an opportunity for the public health nurse and the psychiatric and medical social worker in the clinic to refute this criticism and to prove the plan socially constructive.

### Year's Service Reviewed

We get a small idea of the volume and character of the service given to the men applying to the District Supervisor's Office of the United States Public Health Service by reviewing the method of procedure thought out with the utmost consideration by the Home Service Section

of the Home Service received notarial service, assistance in filling out the form of application according to the proper government regulations, and instructions in securing additional medical evidence. From there to the District Supervisor's Office was but a step. Here the Red Cross representative personally interviewed the men, often acting as intermediary between applicant and physician, frequently bringing to the attention of the latter significant social facts to illuminate an otherwise obscure problem and securing at first hand recommendations from the physicians. Later a visit to the home was promptly made by a Home Service worker and assistance and guidance proffered. The following is a short outline of the type and number of disabled brought to the notice of the Red Cross representative from September, 1919 to September, 1920. This gives a fairly accurate index of the relative incidence of the disabilities encountered, but does not serve to indicate the highly diversified services entailed.

### Disabilities Encountered

Number	Number
Muscular atrophy . . . . .	49
Amputations . . . . .	2
Double amputations . . .	3
Arthritis . . . . .	53
Bronchitis, Gas, Asthma and Emphysema . . . . .	465
Burns (gas) . . . . .	6
Carcinoma . . . . .	7
Cardiac cases . . . . .	293
Dental conditions . . . . .	138
Ear, nose and throat op- erations . . . . .	316
Empyema . . . . .	12
Lethargic encephalitis . .	1
Epilepsy . . . . .	
True . . . . .	32
Traumatic . . . . .	3
With mental complica- tions . . . . .	3
Eye injuries . . . . .	374
Fractures . . . . .	89
Gastritis . . . . .	65
Goiter, thyroid disturb- ance . . . . .	8
Hernia . . . . .	80
Post-influenzal condi- tions . . . . .	9
Malaria . . . . .	4
Malingers . . . . .	27
Meningitis . . . . .	3
Mental and nervous . . .	391
Miscellaneous . . . . .	185
Palsy . . . . .	2
Paralysis (partial and total) . . . . .	
Arms, limbs, fingers, etc., result of war injuries . . . . .	31
Pes planus (double) . . .	118
Pleuritic adhesions . . .	21
Rheumatism . . . . .	138
Sacro-iliac disease . . . .	11
Scolioses . . . . .	9
Arteriosclerosis . . . . .	10
Multiple sclerosis . . . .	1
Skin diseases . . . . .	28
Surgical wounds and op- erations . . . . .	
Nerve injuries, im- pairment of func- tion . . . . .	624
Synovitis, chronic . . .	7
Syphilis and gonorrhea .	135
Neuro-syphilis . . . . .	2
Tuberculosis . . . . .	
Bone . . . . .	2
Laryngeal . . . . .	2
Peritoneum . . . . .	2
Pulmonary . . . . .	470
Trench feet . . . . .	3
Tumors . . . . .	6
Varicose veins . . . . .	16
Final diagnosis un- known . . . . .	281
Total . . . . .	4,534

### Form of Service Given

	Number
Occupational guidance . . . . .	335
Compensation adjustments—affidavits, insurance re- ratings . . . . .	627
Diet and hygiene . . . . .	71
Financial aid—home investigation, temporary relief .	1,103
Outfitting patients for hospitals and sanatoriums . .	842
Contacts made between patients and doctors—com- pensation claims filed (new cases) . . . . .	4,300
Orthopedic shoes secured . . . . .	145
Removal of mental patients from prisons to govern- ment hospitals . . . . .	6
Total . . . . .	7,429

These figures do not include every service man known to the United States Public Health Service, but only those for whom the Home Service acted as intermediary between the government doctors and the patients during that particular period. It does, however, represent those of the Army and Red Cross Nursing Corps, many of whom applied for their War Risk rights and medical treatment through the Home Service.

It might also be noted that but twenty-seven of the

four thousand men applying for compensation could be termed malingers—a remarkably low percentage, and an obvious testimony to the inherent honesty of the American people. Again, it might be observed that on the whole venereal disease showed a rather low percentage. This is due in part to the splendid army instruction and discipline; for the greater majority were not discharged from the army until such a condition, if evident, had been arrested. The "Mental and Nervous" classification includes all varieties of psychoses induced by the war.

### Orthopedic Measures

In various cases of trench feet, callosities, and general foot deformities attendant upon long hikes and exposure, the government doctors prescribed certain modified types of shoe. The Bureau did not make provision for shoes, but did cover the cost of orthopedic corrections. The man was expected to furnish his own shoes, but often he was unable to do so. Therefore arrangements for furnishing these so that treatment might be uninterrupted were made through the Red Cross representative.

In addition it might be permissible to state that an enormous percentage of applications were based on gas disabilities. For the very definite purpose of tying them up more closely to the federal agencies, the Home Service Section made a study of them and found that of the 1,050 men under care in May, 1920, ten had refused Public Health Service treatment, 616 had received no compensation whatever, 102 were actually in training with the Federal Board, and the others were pending adjustments of their government claims. The great majority were working very irregularly or at unsuitable occupations. All stated that they were in very poor health. They were brought to the attention of the Public Health Service early in the summer and the greater part received the special attention of the physicians in the Chest and Neuro-Psychiatric Examining Sections within the next three months. The result was that some were hospitalized, others specially recommended for training, and still others re-rated for increased compensation. Since then the Bureau of War Risk Insurance has become "ruefully aware" of the disastrous effects wrought by asphyxiating gases of modern warfare.

Indeed a panoramic effect of the whole picture may be obtained by an intensive glance at one special department of the Home Service Section. This was aptly termed the Casual Department. Serving as it did a transient population, every type of service man drifted through it from the wandering tramp returned with the added glamour of army life abroad to the better educated man whose career was interrupted at a period most likely to instil a restless wanderlust. Here, too, were found the mentally irresponsible, the ill adjusted lads at odds with families or relatives—in fact, all those held in the throes of an urge created mainly by a fleeting moment of larger opportunity. Have we, we wonder, lost sight of the importance of utilizing the dynamic force of an urge as potent as this?

### Types of War Risk Problems

Because a few concrete instances are often more illuminating than many abstract examples it might be well to present three different types of problems brought to a satisfactory conclusion through Red Cross channels.

First, there was Russel X., who had tuberculosis in its most advanced form when he first applied to the Home Service. He was at once referred to the Public Health Service and hospitalized, but died soon after. To reinstate his insurance was impossible unless he could prove

his condition before death was the same at the time of his application as at his discharge. Several times his claim was refused; but finally, through the efforts of a Red Cross worker in cooperation with a local Bureau representative, the soldier's "case" was proved. On October 14 he applied for compensation and reinstatement of insurance; on November 7, his first compensation check was received; on November 11, he died; and on December 3, the government "came through" with a decision of permanent and total disability, making his insurance payable from the date of his discharge.

Second, and this instance is more unusual than typical, there was a Mrs. Y., the mother of a soldier who had suffered from tuberculosis before he was drafted, but who had always been her main support. From the time of his discharge until his death some two months later he was confined to his bed. He had not taken out insurance while in service. Almost two years after his decease his mother first applied to the Red Cross for compensation for dependency. Her claim was disallowed until sufficient medical evidence proved that the boy might have lived perhaps for years if he had not suffered from exposure in the service. Then, not only her compensation of \$20 a month was secured for her, but an additional stipend through the automatic insurance obtained at the suggestion and through the efforts of the Home Service worker.

The third type is represented by the case of Frank Z., a man who was fortunate in securing a complete and uninterrupted rehabilitation at a time when a break in the link of his restoration to health and earning capacity would have made of him a dependent neurasthenic. He was a gassed patient and immediately recognized as such by the public health doctors. He had been a fur dyer by

occupation. The physicians advised him not to attempt to continue this injurious trade process, remunerative though it was.

They arranged for hydrotherapy treatments, physical exercises, and proper medication. Very light work was advised and two positions were secured: the first, some sort of light electrical work, was too arduous; the second, a "checker up" of employees, was an outdoor job and a satisfactory "filler in" until agricultural training under the Federal Board was provided about three months later.

### The Unfinished Work

It has been roughly estimated that in Philadelphia alone there are about twenty-seven thousand disabled men, whereas in Pennsylvania and Delaware, the two states coming within the jurisdiction of this Division of the Red Cross, there are in the vicinity of 35,000. In the light of past experiences with sickness in general, these figures assume a gigantic aspect. Add to them the large proportion of men found physically and mentally unfit for military service and the situation becomes alarming. Granted, much has already been done,—is being done; much more remains to do before that goal of health can be reached whereby the past can be obscured, the present reconstructed, and the future protected. Europe's many millions, dead of war, famine, and disease, cry out a veritable challenge for better things to America's countless numbers of living and yet unborn. That challenge can be adequately answered only when all men and women—individually—collectively—consecrate themselves, in the spirit of Lincoln's immortal words, to the task of realizing that "it is rather for us the living to be dedicated to the unfinished work. . . ."

## THE GRINNELL CLINIC

BY E. S. EVANS, M.D., GRINNELL, IOWA

THE Grinnell Clinic is an association of six physicians who originally came together for the purpose of furnishing support and financial backing for the Grinnell Community Hospital, built two years ago by public subscription. These men originally agreed to contribute the fees derived from hospital cases to a fund which should be used to guarantee the hospital against a deficit at the end of any fiscal year. This fund was allowed to accumulate until it reached a certain sum, after which all moneys put into it were to be divided equally among the men of the group. Because of their peculiar interest in the hospital, the trustees appointed these men as the staff of the hospital, and left to them the formulation of the house rules and general policies of the hospital and the training school.

Close association of this nature for the period of one year led logically to the acceptance of the idea of complete cooperation both inside and outside of the hospital, with the result that a clinic group was formed.

### Group Practice Instituted

This group is an equal partnership. It is predicated upon the idea that efficiency in medicine, like efficiency anywhere, requires a rather complete degree of specialization. Each physician has a field of work assigned to him, in which he has the last word and in which he is expected to perfect himself as speedily as may be possible. Each man has agreed to drop as rapidly and completely

as he can the slipshod habits of practice which are the customary and familiar earmarks of many a country doctor, and to make full and careful histories and examinations, and to use the facilities of the laboratory to the fullest extent. All patients who can be persuaded to do so are encouraged to submit to careful clinical investigation, and this implies the clinical study of such cases by at least four of the six men constituting the group. A laboratory is in the suite in which the offices are located, which, in connection with the hospital laboratory, affords facilities for practically all of the customary laboratory investigations—bacteriological, serological, and pathological examinations, blood chemistry, urinalysis, analysis of stool, gastric contents, and blood work. The x-ray apparatus at the hospital is available for necessary radiographic work. The hospital laboratory is a branch of the State Board of Health Laboratory.

A system of case record is in use which reduces to a minimum the temptation to slight that side of the work, and the records of most patients—excepting ambulatory cases of minor medicine, etc.—are intended to be as complete as the case records and histories of hospital patients.

The Grinnell Clinic is attempting to conduct the professional part of their affairs in a manner which approximates as nearly as may be the minimum standard set for hospitals by the American College of Surgeons. Careful and complete histories are kept; adequate laboratory facilities are available; no case is operated on until a

history is written, the laboratory reports are in, and a consultation held; and very frequently before the procedure is determined upon the case is discussed in the daily conference. Pathological reports are made on all tissue removed at operation, and a follow-up system is being inaugurated.

Every day the members of the clinic hold a conference which lasts half an hour, at which various cases are discussed, usually a case that has been examined by a number of the men the previous afternoon. Occasionally some hospital case or some case which is on the call list out in town or country is discussed and recommendations made for the care and disposition.

Once a week two hours are spent, usually in the evening, at a meeting which is in the nature of a formal symposium on some particular subject of professional interest. The papers given at these meetings are intended to be careful digests of particular phases of the topic which has been assigned to the several men.

The financial side of the clinic was turned over completely to a business woman of considerable experience and tact. She sees that the books are properly kept and that collections are duly made and bills paid.

It has been found that the problems to be solved by a group of this kind, in an environment such as surrounds this group, are those which result from the conflict of the habits and customs of the general practitioner of the past (and present) with the effort to do careful scientific work. It has also been assured that the success of the business side of the group is the factor that ultimately determines whether or not the group can survive as a group. Moderate charges and collections carefully attended to, with a free list which is supervised by the local Social Service League, constitute the financial policy.

Apart from these considerations it has been found that, while most people appreciate the opportunity to have their difficulties carefully and completely investigated, there is still a sprinkling of those who admire and love to patronize the doctor who "can tell what is the matter just by looking at me." Occasionally someone complains that "Doctor So and So has doctored me for a long time and never had to examine me or make me take off my shirt." Then, too, there is some tendency on the part of such patients to suspect that this is a scheme for getting people into the office and passing them along from one doctor to another for the purpose of collecting a multiplicity of fees. Fortunately, these ideas are dying out quite rapidly, though tact was necessary in the beginning to combat them. Other doctors, too, have been more or less skeptical of the proposition and have pointed out, with some truth, that the doctors in the clinic have lived here all their lives, that they have never yet set the world on fire, and that it would probably not be noticed to be in conflagration yet for quite a while in this territory. These allegations have rather a firm foundation in fact. Doctors initiating such a plan in their own community do labor under a handicap from the general familiarity that grows out of long association. Some of this particular group were reared in Grinnell or in the vicinity, having practised here for varying lengths of time. None of them have become wealthy in the pursuit of medicine, though all have enjoyed good general practice. But they are men who see the handwriting on the wall. Their community demands more efficient service in other respects, such as lighting, heating, sewage disposal, waterworks, etc., than was available thirty years ago; and it is just as true that the community demands more modern and scientific care of its sick and disabled than it did thirty years ago. The old order passes. Many people of the older

generation are a little slow in seeing it, but a new day has dawned in the practice of medicine, and the Grinnell Clinic is endeavoring to bring to this community some of the benefits of recent advances in the medical sciences.

### Organization Questions

From the doctor's point of view, a clinic must be run either by some man who is the arbiter and court of last resort, who takes all the profits and stands all the losses, paying the others a salary; or it must be an equal partnership. Clinics essaying to run on the pro rata basis inevitably break up. The men forming the Grinnell Clinic are equal partners, and it is their unanimous opinion that the personal satisfaction in this association and the great joy in the cooperative labor at hand more than compensates for any seeming inequality in the way of prestige sacrificed, or individual financial objections to the partnership plan.

From the patient's point of view, it may be said that the difference in efficiency is monumental. The percentage of error is minimized, and the patient very soon comes to realize that the arrangement is greatly to his advantage. From every point of view it must be conceded that the clinic plan is most advantageous to the patient, and at the same time it enables the doctor to make a long stride forward in the direction of professional advancement.

### DR. HAVEN EMERSON APPOINTED



Dr. Haven Emerson, former commissioner of health of New York City, has been appointed medical advisor and assistant director of the Bureau of War Risk Insurance. The appointment of Dr. Emerson to this important post is in conformity with the policy of the Bureau of War Risk Insurance to select its headquarters medical staff from the civilian medical profession.



## BOSTON CHILD WELFARE WEEK

**P**RACTICALLY every organization in Boston cooperated with the Public Health Committee during the week of February 8 to 12, inclusive, in a program demonstrating various methods of health preservation, especially as applied to children. Assuming a sound scientific basis for health movement, a constructive program was arranged to interest the public in the health betterment of children. School authorities extended a helping hand and



Underwood &amp; Underwood.

A physician examining a little patient in a recent drive in the Hub City for "Better Children."

settlements and social workers exerted special effort to bring the parents to the exhibits and public meetings. The object of the campaign was to evolve a more permanent plan of work in the education of prospective mothers, and in relieving some of the health hazards that affect little children. The Committee on Health Education conducted an information bureau. Part of the demonstration was a health center equipped with nurses, physi-



Underwood &amp; Underwood.

Demonstrations in dental hygiene constitute a part of the work in Boston's recent health week.

cians specializing in the care of children, and dental hygienists. Parents were invited to have their children weighed and measured and advice was given as asked for on special problems. A social worker interested herself in securing help for parents when this was found necessary.

The Nutrition Committee sponsored exhibits from the school lunch department of the Women's Educational and

Industrial Union, from the Food Economic Kitchen, which supplied hot soup to some of the elementary schools, from Dr. William R. P. Emerson's nutrition clinic for delicate children; from the Boston Dispensary; from the Dietetic Bureau of the League for Preventive Work; from the Massachusetts Committee on Health in Industry; from the Nutrition Division of the State Department of Public Health; and from the Fathers and Mothers Club. Further features of the nutrition exhibit were ideal containers for luncheons that need to be carried, suggested meals for children, and nutrition panels from the National Child Welfare Association.

## OCCUPATIONAL THERAPY

**T**HE function of occupational therapy has long since passed the experimental stage and the efforts of those who advocate its use can now be devoted toward a better adaptation of the method to meet the special needs of the patient; for here, as elsewhere, the paramount consideration is the need of the patient, and whether occupational therapy be applied as a cure for "hospitalization"; a means of relieving the monotony of prolonged treatment, as in tuberculosis, so that real rest and not merely enforced idleness results; control gained of useless members; interest in life revived through new activities; or means of a livelihood so applied as to save the patient from hopeless dependency, the success of the method lies in it being prescribed and carried out in a manner that exactly fits the individual case.

The primary need everywhere is trained workers; great increase in facilities is called for; and personality studies must fit the measure to the patient psychically as well as physically.

Chronicity calls for methods of this kind in a marked degree. The commoner forms of chronicity, especially those common to adult life, and those which become progressively worse over a long period, it becomes a humane procedure as well as simplifies the problem of handling the hopeless to afford all possible activity and to open up as many channels of interest as possible.

In the so-called "functional disorders," like hysteria, neurasthenia, psychasthenia, chronic diseases of the joints, Bright's disease, diabetes, cardiac disorders—all affecting adults during the period when they are most important to their families—the economic aspect looms large. When the loss of wages extends over months and years, retraining in vocational lines has an added psychic value if the chronic invalid is thereby enabled to contribute to his care which extends over a long period.

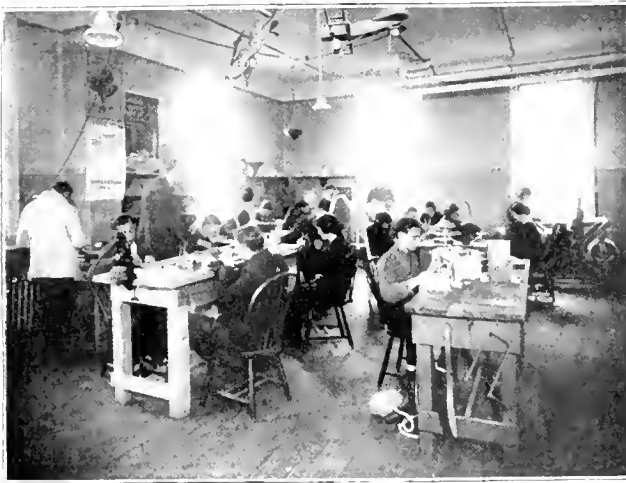
The magnitude of the social aspect of the care of the chronic patient is not appreciated or our provision for the care of acute disorders would not be so complicated by the problem of finding adequate service for the convalescent.

Aside from any permanent value—economic or other-



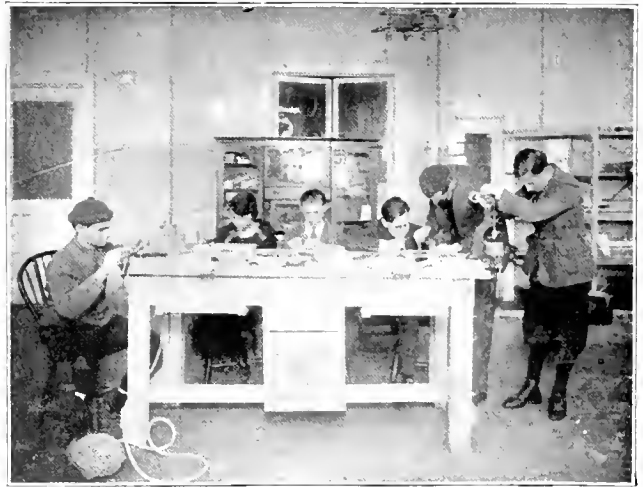
Keystone View Company, Inc.

A class in commercial art at the Montefiore Sanitarium at Bedford Hills, N. Y. Show card and sign writing have vocational value as a light and interesting occupation for the handicapped.



Keystone View Company, Inc.

A general view of the workshop exposed to light on all sides. Character of the work is prescribed by and under the observation of the medical staff.



Keystone View Company, Inc.

A former tool maker is employed in making jewelry tools and other tools. The jewelry-making class is in charge of a former patient who received instruction in jewelry-making at the Sanitarium.

wise—to accrue from occupational therapy, the measure would be justified as an aid in the crucial period between the acute stage of disease and the complete restoration of the invalid. Reports from tuberculosis sanatoriums show a much greater degree of persistence in treatment among these patients to whom occupational therapy is available, and in the cardiac child it enables the enforced rest which spells comfort or cure for the afflicted.

It is, however, in the re-education of the handicapped that results in restoring function and in making useful members of society out of physical derelicts that occupational therapy has received its recent impetus.

The loss to society of useful members who because of war injuries or other handicaps have suddenly closed to them all their customary channels of competition is largely countered by a system of therapy which not merely treats the injury but renews the interest, directs activities into new and productive channels, supports the personality, and builds character and resourcefulness while the process of physical restoration is going on.

The Montefiore Sanitarium at Bedford Hills, N. Y., devotes special care to finding avenues for remunerative employment of patients in whom tuberculosis has been arrested. The restorative occupational work is as far as possible directed toward retraining in a pursuit that will be safe and at the same time remunerative. The

workshops are light and well ventilated, the time allotment and general character of the work are prescribed by and are under the observation of the medical staff. The general efficacy of the method is reflected in the progress and contentment of the patients and the percentage who are willing to remain until they may be regularly and safely discharged.

S. P. M.

### CHILD LABOR CONFERENCE

The Sixteenth National Conference on Child Labor will be held in connection with the Conference on Social Work June 22 to June 29, inclusive, in Milwaukee. A number of allied organizations will hold meetings in Milwaukee either immediately prior to or during the week of the Social Work Conference meeting. Among these organizations are: Public Health Nurses' Association, the Jewish Conference of Social Welfare, the Canadian Conference of Public Welfare, National Board of the Y. W. C. A., the National Association for Community Organization, Interstate Conference on Illegitimacy, National Probation Association, National Conference on Education of Backward, Truant, and Delinquent Children, National Children's Home Society, National Travelers' Aid Society.

### HEALTH CONDITIONS EVALUATED

In a recent memorandum to the Ministry of Health in England, Sir George Newman emphasizes that there are five great reliable sources by means of which to evaluate the health condition of the people—the national health service, the school medical service, the health insurance system, the national service department, which, during the war, took stock of the physical condition of recruits and industrial workers, and the returns from the office of the registrar general, which are, in fact, the official vital statistics of the nation. By combining these sources of information, the condition of the population may be estimated in much more accurate fashion than ever before.

### MOUTH HYGIENE BOOKLET

The September-October issue of the *Commonwealth*, the bulletin of the Massachusetts Department of Public Health, contains 356 pages devoted to twenty-two different phases of mouth hygiene activities, including an extensive bibliography on the subject. It is issued to promote uniformity in the activities in this field.



Keystone View Company, Inc.

Steam rollers, auto trucks, cannons and various toys to delight any child are made by the wheel chair patients of Montefiore Home and Hospital from discarded tin cans.

# BOOKS OF THE MONTH

## Comment on Current Medical and Health Literature and Announcements of New Books

**GENERAL PATHOLOGY.** By Dr. Ernst Ziegler. From the eleventh revised German edition, Gustav Fisher, Jena, 1905. Revised by Douglas Symmers, M.D.<sup>1</sup>

One is so accustomed to highly recommend Ziegler's classical textbook on general pathology, that one hesitates in not giving full approbation of the last English translation of this work. This new American edition, however, is not only not up to the standard of previous translations, but falls far short of other American textbooks of pathology. This 1921 edition has not been brought up to date, as can be noted by a glance at the references given in the bibliography. On so important a subject as thrombosis, the most recent reference is dated 1906. It is a disappointment to find that most of the illustrations are crude line drawings characteristic of textbooks twenty years old. Illustrations of this sort are of no help in visualizing microscopic pathological anatomy. There are some more modern types of illustrations, but these fall very far short of the standard we are accustomed to in modern textbooks. Pathology, today, is far ahead of this textbook, and we cannot recommend this edition to medical students and practitioners. Dr. Wm. Thalhimer.

**SURGERY, ITS PRINCIPLES AND PRACTICE.** By Various Authors. Edited by William Williams Keen, M.D., LL.D., emeritus professor of the principles of surgery and of clinical surgery, Jefferson Medical College, Philadelphia, Vol. VII.<sup>2</sup>

During the past years of bloodshed many branches of surgery have undergone tremendous changes. The vast clinical material flowing back from the trenches carried with it innumerable lessons. No textbook embracing the field of general surgery could be complete without incorporating this recently acquired knowledge.

The seventh volume of Keen's surgery covers many of the subjects in which the greatest advances have been made. The chapter on the Treatment of Infected Wounds, with special reference to the Carrel-Dakin technique is an excellent summary of one of the greatest achievements of modern surgery. There is an admirable article on gunshot fractures. Chapter XXIII is a complete monograph on military orthopedic surgery by Sir Robert Jones and Hey-Groves. It is not possible in the small space allotted a review to dwell at length upon the various topics, suffice it to mention the subject of Nerve Injury and surgical repair, Blood vessel surgery, Blood Transfusion, the prophylaxis and treatment of Tetanus, Gas Gangrene and of Anthrax. Two chapters of a strictly military nature are, The Organization and Administration of the Medical Department of the Army, and Surgery on a Fighting Ship. A chapter of no less importance than those mentioned is one referring entirely to civilian life, namely Lovett's article on Orthopedics in Civil Life, emphasizing especially

our progress in repairing the ravages of infantile paralysis. The articles are written in a comprehensible manner, the text is profusely illustrated and well indexed.

Volume VII is a unit and although a logical addition to the preceeding volumes might well merit a title of its own. It will speedily find its way to the book shelves of the progressive surgeon.

There are still two important topics, outgrowths of war surgery, which are not covered in this book and which the reviewer hopes are taken up in Volume VIII namely the development of the treatment of empyema and the subject of lung surgery.

Ralph B. Bettman.

**THE SCHOOL OF SALERNUM.** The English Version. By Sir John Harington. History of the School of Salerno. By Francis R. Packard, M.D., and a Note on the Prehistory of the Regimen Sanitatis. By Fielding H. Garrison, M.D.<sup>3</sup>

This booklet has an interesting history that is woven about Salerno, the great center of medieval medicine. The poem which comprises the volume is one of the most famous literary survivals of the middle ages. The authorship of the poem, as the interesting preface says, is a matter of great dispute. Some consider it to be of composite authorship, whereas others attribute it to one man, who stood at the head of the faculty of Salerno at the time poem was written, probably the twelfth century. But, whatever the origin of the Regimen Sanitatis Salernitanum, the poem must have been quite popular as it passed through several hundred editions, was translated into many languages, and served at one time as a standard textbook of medicine, and later as a handbook of domestic medicine. In its present form, which is the English version of Sir John Harington, an attache of the court of Elizabeth, compiles not only the unique poem and notes for its elucidation, but also a complete and fascinating history of the school of Salerno and a scholarly description of the historical background of the poem by Dr. Fielding H. Garrison.

I. P. L.

**COMMON INFECTIONS OF THE KIDNEYS WITH THE COLON BACILLUS AND ALLIED BACTERIA.** Based on a course of lectures delivered at the London Hospital by Frank Kidd, M.B., B.C. (Cantab.), F.R.C.S. Eng. With an additional lecture on the bacteriology of the urine by Dr. Philip Panton, clinical pathologist, London Hospital.<sup>4</sup>

The book before us dealing with common infections of the kidneys is one which should find a place in the library of many physicians. It is a practical, logical exposition of an interesting subject. All essential points are brought out and the size of the volume and arrangement of the text make it a convenient and ready reference book.

1. William Wood & Co., New York, 1921.

2. W. B. Saunders Company, Philadelphia, 1921.

3. Paul B. Hoeber, New York, 1920.

4. Oxford University Press, New York, 1920.

# MODERN MEDICINE

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**THE RADIOGRAPHY OF THE CHEST.** Vol. 1, Pulmonary Tuberculosis. By Walker Overend, M.A., M.D. (Oxon), B.Sc. (Lond.)<sup>5</sup>

There is a tremendous amount of information to be obtained from careful study of this book. Casual reading of it is impossible as neither the style nor the arrangement is easy to follow. However, the contents fully repay one for careful reading through the volume.

**THE OXFORD MEDICINE.** By Various Authors. Edited by Henry A. Christian, A.M., M.D.; and Sir James Mackenzie, M.D., F.R.C.P., LL.D., F.R.S. Volume III—Diseases of the Digestive System, Kidneys, and Ductless Glands.<sup>6</sup>

The volume deals with the stomach, intestines, peritoneum, liver, pancreas, and some of the ductless glands. It also contains a discussion of nephritis by Dr. Christian. This discussion stands out as an up-to-the-minute presentation of a subject that at the present time is certainly difficult to write about, but Christian seems to have maintained an attitude of judicious skepticism, and to have presented the matter in a logical, clear, and simple manner. The contributions of Rehfuess and of Sippy are interesting, but it seems to the reviewer that they would have added to their value had more extensive bibliographical references been used.

**THE NERVOUS HOUSEWIFE.** By Abraham Myerson, M.D.<sup>7</sup>

"The Nervous Housewife" is a patient who is seen very frequently in the private office or the wards of a general hospital. She is seen probably much more frequently than she is recognized for under the cloak of her numerous symptoms she is very apt to hide the real cause of her complaints. Myerson's book is an unusually interesting, popularly written discussion of this lady. Reading as it does almost like a novel, the scientific references seem sound throughout. Strange to relate, a modern neurological book written popularly is not Freudian.

**THE CHEMISTRY AND ANALYSIS OF DRUGS AND MEDICINES.** By Henry C. Fuller, B.S., in charge of the Division of Drug and Food Products, Institute of Industrial Research, Washington, D. C.<sup>8</sup>

The analytical chemist is often confronted with the task of identifying a mixture containing some of the more rare drugs. To do this it was often necessary to go through a vast amount of literature found in various texts and journals, to spend a large amount of time previous to the actual analytical work. With Fuller's book on hand, this problem is solved. The book gives methods for the identification and estimation of drugs, it lays special emphasis on the official methods used by the Government laboratories, a feature which is of value in case of court proceedings. A set of methods for drug assaying is included in the text.

The book is well arranged. A more thorough citation of foreign literature might have been of additional value.

**A COMPEND OF DISEASES OF THE SKIN.** By Jay Frank Schamberg, A.M., M.D.<sup>9</sup>

A handbook on diseases of the skin is an indispensable volume for the bookshelf of the busy physician, a need supplied by this excellent little book which for ready reference and quick use has a distinct field.

5. C. V. Mosby Company, St. Louis, 1920.

6. Oxford University Press, New York, 1921.

7. Little, Brown & Co., Boston, 1920.

8. John Wiley & Sons, Inc., New York, 1920.

9. P. Blakiston's Son & Co., Philadelphia, 1921.

# THE NATION'S HEALTH

(Continuing MODERN MEDICINE)

*A Monthly Magazine Devoted to Community Health with Special  
Reference to Industrial and Institutional Health Problems*

Volume III

Chicago, May, 1921

Number 5

## What the Air Does to Us

BY ELLSWORTH HUNTINGTON, PH.D., YALE UNIVERSITY, NEW HAVEN, CONN.

THREE things, and only three—food, water, and air—may be considered as absolutely essential to human life. The chief difficulty of primitive man was with food. He usually lived where the air was neither excessively hot nor extremely cold, and he breathed the pure, unheated outdoor air. He drank of the running brooks and springs which almost never were contaminated. Thus his supplies of air and water were the object of no special concern to primitive man and were the source of no great inconvenience. But food was hard to procure. For untold ages man's supreme effort was to procure food enough for himself and his family. Despite his efforts he was in immediate distress whenever the beasts of the chase were scanty, or when for any reason there was a dearth of fruits and nuts, and other food products. Thus, under primitive conditions, where one person died from bad air or poor water, probably a score died from lack of food.

But the time came when there was a great reversal in the relative rôles of air, water, and food. Man branched out into highly diverse climatic regions; he multiplied and filled the earth; and he learned to build for himself tight houses that keep out the air, and that can be warmed by means of fires. Today the results of this change are perhaps at a maximum in countries such as China, where millions of people die because for months each winter they shut themselves up in warm, unventilated houses. Other millions die from dis-

eases which have their source in an impure water supply. This number would be still greater but for the fact that the Chinese have acquired the almost universal habit of using tea and have incidentally gained thereby an advantage in the use of boiled water. Lack of food is also responsible for an enormous percentage of deaths in catastrophes like the famine which is now devastating China. A hundred thousand years has brought that country to a point where she is scarcely better off than was primitive man in respect to food, and is in far worse straits in respect to air and water.

### Conditions Here Improving

Though in many respects our own condition is no better than that of our ancestors of ten or a hundred thousand years ago, the reversal from primitive conditions has here progressed farther than with the Chinese, and we are now on the upward road. The amount of suffering in the United States from scarcity of food is negligible, although much harm arises from the lack of a sufficient variety, from poor cooking, from overeating, and from other abuses. Nevertheless the amount of distress and death arising from this source is vastly less than among primitive peoples, or in China.

Much the same state of affairs obtains with regard to drinking water. The deaths which may still be charged to typhoid, dysentery, and other water-borne diseases are relatively more numerous than the deaths

from such causes among our primitive ancestors, for the modern density of population is against us; but almost all communities in the United States are awake to the necessity of supplying an abundance of the purest kind of water.

With air the case is different. Where one man among our primitive ancestors died from the effects of improper air, perhaps a dozen or a score die among us. For example, in cities the death rate sometimes rises 50 per cent during a hot wave; and the health and efficiency of an ordinary community in the northern United States in winter is by actual measurement anywhere from 10 to 30 per cent lower than in the late autumn or the late spring, a condition which could be greatly mitigated if everyone understood and applied the true principles of the use and care of the air.

### Air to Be Used

The words "use and care" are employed advisedly. Although the air comes to us without cost, it is something to be used and cared for as carefully as food and drink. The great principle that should govern our use of the air is that of the *optimum*. The optimum is the most favorable condition. Each living species has a definite optimum in respect to all sorts of conditions. Thus the optima for a certain fish may include a temperature of fifty degrees, an abundance of small cephalopods for food, a low percentage of salinity, a slow but steady movement

of the water, and a relatively high percentage of dissolved oxygen. In no one place do all these optima prevail at any one time; therefore the fish seeks the region where the greatest number of conditions approach the optimum and none is extremely far from it. Often by migrating with the seasons the fish can keep much more nearly in the best combination of optima than if the animal remained continuously in one place.

Man, unlike the fish, can create his own optima, and in progressive countries he is rapidly doing so in respect to food and drink, and more slowly in respect to the air. The chief atmospheric optima relate to (1) temperature; (2) purity; (3) movement; (4) humidity; and (5) variability. These are not mentioned in the order of their importance, but according to the degree of attention which they commonly command.

Temperature undoubtedly comes first on both counts. The optimum temperature, taking the average for day and night together, is about 64 degrees F. It may vary a little for individuals; age makes some difference; so does the climate in which people have grown up; and there appears to be a slight difference according to race and occupation. The most surprising fact about the optimum temperature, however, is the slightness of these differences. Whether dealing with babies in Paris, adults in Sicily, factory workers in New England, Cuban cigar makers in Florida, Negroes in Virginia, or white people in Finland, the optimum never ranges below 60° or above 68°. Other conditions may of course cause people's health and strength to be greatest at some other temperature, but that is not the result of temperature. By and large it is established beyond question that an average of about 64° is the best condition for people of European origin. This means that in the rooms where people live and work the temperature may range up to 68° or down to 60°; it should never, however, remain above 68° any longer than is absolutely necessary. Higher temperatures impose a strain upon the heart and actually raise the temperature of the blood; their effect is like that of a mild fever. Of course people must be comfortable, and in winter many are not comfortable unless the thermometer stands at 70° or higher; but that is merely because the humidity is not at the optimum. Our great mistake in respect to temperature is that we act as if it were the one essential condition of the air, and also

as if there were no harm in high temperature but great harm in low. As a matter of fact, either extreme is bad, but in the United States far more harm comes from temperatures that are too high than from those that are too low.

Every one realizes the importance of pure air, but in practice we do not begin to take pains enough in this respect. Absolute purity is of course the standard. How important this is may be judged by comparing winters when there is plenty of snow with those when the ground is bare. This was well illustrated in 1919-20, a winter that was extremely cold in the eastern United States, so that the death rate would normally have risen very high. A cover of snow for many months, however, by preventing the air from being dusty and full of germs, materially lowered the death rate.

### The Air Should Move

It is well recognized that movement of air is highly important. Air that seems quite impure and foul, or that is too hot and moist does less harm when moving than does much better air when stationary. One of the great reasons why we are behind primitive man in our relation to the air is that he was not skillful enough to shelter himself from moving air, while we have developed the false idea that the air in our houses should be almost motionless. While drafts are to be avoided, there can be a constant and considerable movement of the air without creating a draft.

One reason why Americans have such a superstitious horror of drafts is that we have not yet learned the importance of atmospheric humidity. Every one knows that extreme moisture is bad in hot weather, but it is not so generally appreciated that abundant and exact observations show excessive dryness to be bad also. In the long run, Americans suffer vastly more from dryness of the atmosphere than from too much moisture. Moisture in the air is important in three respects: (1) The human lungs function best and can most easily regulate the temperature of the body when the air contains about five grains of water vapor per cubic foot. This means a relative humidity of about 100 per cent at a temperature of 56 degrees; about 75 per cent at 64 degrees; about 65 per cent at 70 degrees; and still less at higher temperatures. (2) Under ordinary conditions moist air is less dusty than dry. (3) If the air contains the right amount of water vapor, the evapora-

tion from the skin at temperatures of 64 to 68 degrees is relatively slight, yet, sufficient, and, as a consequence, people feel as warm in a temperature of 65 degrees within doors on a winter day as they do ordinarily at 70 degrees or more when the air contains only about one-fourth as much moisture as it should. In the same way, if the air of the right temperature contains the right amount of vapor, a gentle movement does not chill people as does a similar movement of dry air. Thus the correct amount of moisture is not only of direct benefit to the lungs and to the mucous membranes, but is a help toward achieving the optimum of purity, temperature, and movement.

Variability of temperature and probably of other conditions appears to be highly important. Although the matter has not yet been thoroughly studied, this much is clear:—So far as exact studies have been made, they show that while extreme variations may do harm, mild variations are distinctly stimulating. If the temperature of the air falls a little, almost every one is stimulated and begins to work harder. A rise of temperature has an opposite but less marked effect. Hence the net result of moderate changes, both indoors and out, is to improve people's health and make them work harder.

Other atmospheric conditions, such as electricity and light, also play a part in determining the health of the nation. For our present purpose, however, the great outstanding fact is that by shutting ourselves up in houses and by emphasizing protection against low temperature as if it were the only harmful climatic condition, we have put ourselves in a position where our relation to the air is vastly worse than that of the primitive ancestors whose susceptibilities we still inherit, or than our own position in respect to food and drink. Some day our aim will be not merely to warm our houses in winter, but to fill them at all seasons with pure air having the optimum temperature, the optimum humidity, and the optimum variability and movement. When that is done, many of the weaknesses and ailments that spring from our modern indoor life will be greatly mitigated.

### Censorship Laws for Movies

Censorship laws for motion pictures have been passed in Pennsylvania, Ohio, Kansas, and Maryland. Nine other states have had bills defeated; in nine legislatures the bills are pending.



# Exercise Prescribed for the Individual

## Precision is as Important in Prescribing Exercise as in Any Other Form of Therapy

By FLORENCE L. MEREDITH, M.D., ASSOCIATE PROFESSOR OF HYGIENE, WOMEN'S MEDICAL COLLEGE OF PENNSYLVANIA, PHILADELPHIA, PA.

**A**LTHOUGH we have had gymnasiums in our midst for many centuries, there is one aspect of the utility of which we take advantage to a very small extent. We do not use them for the purpose of teaching individuals special individual exercises, needed in their own cases either for the cure of functional disorders which seem imminent, or, best of all, the building up of the sort of health which in their individual cases puts any maladies, organic or functional, farther away.

### Not Confined to Orthopedics

We have utilized the gymnasium, although to a much less extent than we should, to provide general exercise to individuals in groups, and when we have used it for individual purposes it has been largely to correct certain postural and anatomic defects. Gymnasium means to the average physician and layman alike a place where the individual is put into a class and does stereotyped series of exercises, progressing from beginner's to advanced grade, the only differentiation among the members of a class usually being in amount rather than in kind of exercise. Corrective gymnastics, in the same way, means to most people the correction of such conditions as scoliosis, or defects ensuing after paralyzes, fractures, sprains, and the like.

There is nothing whatever to be said against the utilization of the gymnasium for both these purposes; in fact, they should be used a hundred or a thousand times as much as they are

now in that way. But to omit the use of the gymnasium for the three purposes mentioned above to meet individual needs is deliberately to deprive ourselves of a health measure which would add very greatly to our armamentarium.

The burden of my suggestion is that individual as well as group exercise be offered in every gymnasium, and that these individual exercises include not only "correction" as it is now understood, but also correction of many functional physiological conditions. We should also go more nearly to the root of the matter in each case, trying to use individual exercise for the prevention of possible ill health, and especially for the con-



Underwood & Underwood  
The art of self-defense is taught girls at the University of Cincinnati who expect to become physical culture teachers, an art which could well be extended to all co-eds.

struction, out of the individual material, of health.

### Limitations of Group Exercise

It is quite obvious that there are advantages pertaining to group exercise which have made it so long popular, and that some of these advantages do not hold in individual work. Chief among these is the arousing of the group spirit, by which the individual in company with others doing the same thing, is spurred on as he would not be alone. There is probably no spirit more desirable to foster in our democratic country than that of together-ness. Every way in which this urge can be evoked and each individual made to feel like a member of a great whole striving toward a great end, should be en-

couraged. It is for this reason that sports are particularly desirable. The fact of playing together in unity and yet in competition, which has its counterpart in the business and political life of the country, or should have, makes "sports" of individuals,—and if each and every individual had somehow acquired the spirit described by the word "good sport," our problems of many kinds would cease.

In group gymnasium work, however, an individual may be spurred by emulation to do too much, and his health may suffer accordingly. All individuals certainly have not the same needs, and they are not even near enough alike for it to be safe to put them in the same class in the gymnasium. What is one man's meat may be another man's poison. Fortunately, the individual who goes to gymnasium usually has sufficient judgment not to carry the work too far,—but he may. Then, again, if he tends to do this excessive work, the watchfulness of the teacher may intercept him,—but it may not. The person may not be wise and the teacher may not be watchful, and the result may be overdoing. If the result is, as it might easily be, impaired health, the gymnasium will suffer the consequent loss of good standing with that individual and perhaps many others. We have to make sure that each individual gets what he comes for, better health, or we are risking the good name of our gymnasium.



Underwood & Underwood  
Outdoor games are employed at the Florida State College for Women at Tallahassee. Baseball, swimming, and other outdoor games constitute the required course in physical education.



Underwood & Underwood  
Army Red Cross nurses in a tug of war during the Mosier Athletic Carnival at the United States General Hospital No. 41, Fox Hills, Staten Island, N. Y.



Underwood & Underwood  
This group of girls at Castle School, Tarrytown, N. Y., are playing "cage ball," one of the many physical culture games invented by Dr. Emmett Dunn Angell. Here health and strength accrue from games in which only the fun is thought of.

On the other hand, the individual who is put into a class may not receive any impetus at all. Being still a free agent, although under the strict eye of the instructor, he or she drops out of first one and then another exercise, or perhaps stands up against the wall and does not even begin, or may go through the motions of exercise without putting any energy or effort into it. We have found among girls a great degree of shyness about appearing at a disadvantage among the other girls. Rather than not do a thing well they will not do it at all. The other girls may not have had any more gymnasium experience, but get along better because of their lack of shyness and because of individual variation in muscular development and the knack of using muscles. Sometimes it is the gymnasium suit which causes the shyness. They may be ashamed of their scrawniness or plumpness as the case may be, but it is usually their inability to show off in muscular ways and the resulting self-conscious awkwardness. Their stay in the gymnasium is usually quite brief. The teacher herself, by calling attention to them, as she often must for the sake of class discipline, often precipitates their leaving. But the teacher may tactfully hold them through the season, knowing that they are not getting anything from the gymnasium, yet hoping against hope that they will develop in time. Of course, their failure to get any better health out of the gymnasium will be charged

to the gymnasium, or perhaps the teacher, or gymnasiums as a whole, and exercise per se will be incriminated.

#### Unsuited to Class Work

There are thus two classes of persons who are not suited to regular classes, those whose physical condition is such that they should not be over-stimulated, and whose mental condition is such that in a class they are sure to be; and those who ought to be more stimulated, but are too shy and too afraid in a class. One type gets too much out of a gymnasium class, to its detriment, and the other type too little, equally to its detriment. This applies equally well to those who have no special needs of any kind, and who have no special defects to be considered, those who would be called average, and who are not greatly harmed either by too much or too little exercise. But the absence of actual harm does not mean that the gymnasium has done its part, for its function is not discharged until actual good has resulted.

When we come to the large number of individuals who, while apparently up to the average, are as a matter of fact likely to be harmed by one or another kind of gymnasim work, it is quite another matter. Among girls, with whose physical culture I am most familiar, this variety forms a large percentage of those I examine. They have definite needs in the way of exercise,—a certain amount and variety being positively indicated, and

any other amount and variety being positively contra-indicated. These girls cannot be put into classes safely until the physician who examines them, the physical director, and the girls themselves know what is beneficial, what can be done and what should not be attempted. In the case of these girls, if it were a choice of individual exercises or class exercises, the former should always be chosen; but let me add quickly that, if it is a choice of class exercise or no exercise, the chances are about twenty to one that the average girl, even with special needs, will be more harmed by no exercise than by judicious class exercise. This applies even to many heart cases, and others of equal seriousness. Those who have been exercising freely, even unguided, invariably show up better than those who have been doing nothing. We are discussing here, however, only the relative advantage of individual or group work.

I am often reminded of the old days when in the springtime a mixture was made of sulphur and molasses, and every child, and grown-up, too, was treated to a nasty spoonful every morning "three days running and three days skipping." We now omit the sulphur and molasses, but the way we prescribe the gymnasium, the same amounts, the same time of year, regardless of individual needs and consequences, because it is "good for what ails you," sounds very much like the old empiricism of the laity. There is no precision or sound reasoning about it, and no possibility of ob-



Underwood & Underwood  
A high school girl at Roxbury, Mass., clearing the bar in fine style at the annual field day of the practical arts.

taining accurate results. We have all said for years that gymnasium exercise helps people, yet it would be difficult for most doctors and physical directors to show what percentage of people are helped, what kinds of people are helped the most, and in what ways and in what degree.

Prescribed Exercise

In order to get away from generalities and show exactly what can be done by a gymnasium and how, it will be necessary for us to study each individual case more accurately, and prescribe exercise as we do other health and therapeutic measures. The first requirement before we can fully appreciate what happens in the case of each girl is, by means of a complete medical and physical examination, to find out all we can about her before she is put into the gymnasium. This is the only scientific way of making use of formal exercise. It may be said, and has been said, that on this theory a physical examination should be taken before one does anything at all in the world, for general gymnastic work is no more likely to do harm if indulged in indiscriminately than are all other activities included under getting a living and having a life. This is quite true. The time will come when individuals will not feel so free to go ahead on their own initiative, unguided by a knowledge of where they stand in health and in what direction the proposed activity will take them. Already examinations before entering schools and industrial positions are very popular, for this reason. It will in time be seen that the advantage of this forehanded knowledge is a very great one. But because we cannot at present carry it out in the commencing of every sort of activity, we can at least carry it out in a field as particularly and closely related to health as the gymnasium. The examination should include the following observations:

PHYSICAL EXAMINATION

Name .....  
Age..... Height..... Weight .....

POSTURE

Antero-posterior curves

Head .....

Neck .....

7th cerv. ....

Dorsal .....

Lumbar .....

Lateral

Curves .....

Displacement .....

Deviation .....

Rotation .....

Shoulders: r..... l.....

Scapulae: r..... l.....

Chest .....

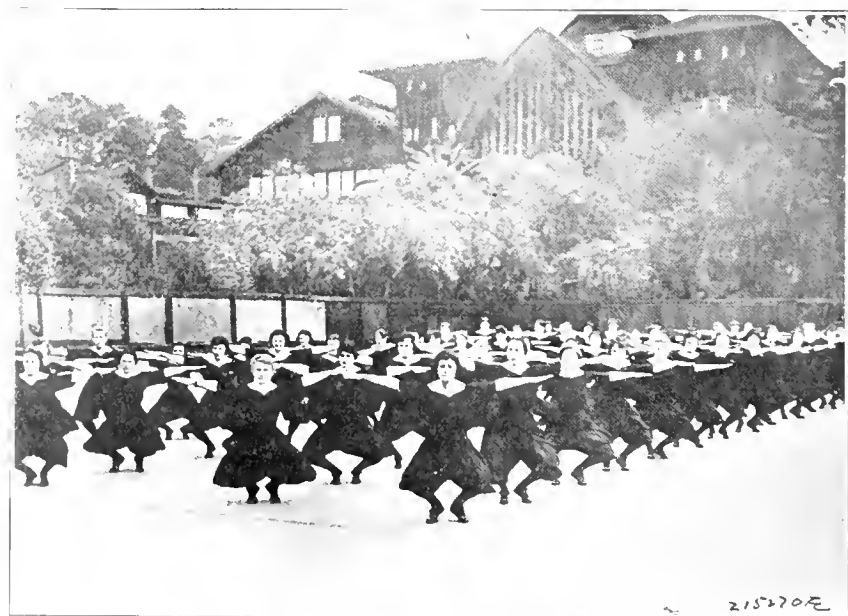
Abdomen .....

Hips: r..... l.....

Legs .....

Flexibility of spine.....

Correction of posture.....



The girls in the physical culture classes of Miss Ruth Elliott of the University of California likewise have the advantage of outdoor games, both group and individual methods entering into the prescribed work.

F E E T

Right..... Left.....

Eversion.....

Pronation.....

Long. Arch.....

Tran. Arch.....

Contracture.....

Toes.....

Corns.....

Callous.....

Bunion.....

Correction.....

Sitting posture.....

Gait.....

Lung capacity.....

Strength.....

Forearm: rt.....

left.....

Chest.....

Shoulder retr.....

Back.....

Legs.....

Total.....

Girths.....

Chest exp.....

con..... expansion.....

9th rib exp.....

con..... expansion.....

Waist.....

Hips.....

Breadth.....

9th rib.....

Waist.....

Hips.....

Depth.....

Chest.....

Abdomen.....

Habits of physical activity:

Work.....

Home.....

Exercise.....

Recreation.....

Recommendations.....

Examined by.....

Date.....

The next need, after the physical examination of the applicants, is plenty of well trained physical directors. One teacher with a dozen large classes can do better work if her pupils are sent to her examined and partly classified, but she cannot arrange her work so as to include much personal work. If the organizations conducting gymnasiums were to realize that part of their essential

equipment is not one director, but a number, it seems to me that the public would gladly pay for them, as for all other essential equipment, as they would expect to pay for thorough examinations. Even admitting it not to be essential in order to have the gymnasium do good work, it can be pointed out that a gymnasium plus five physical directors is worth very much more than five times as much as with one. In fact, five, or whatever may be the full number needed to do all the necessary individual work, will make the gymnasium an important factor in the health of any community, whereas, under-manned, it might have had relatively inconsiderable value. If the gymnasium can make an impression on the health of the community, as it will if individual work is properly done, the public will early recognize the fact and be eager to pay the increased cost, instead of being, as they now often are, loath to pay the lower cost.

Summer School for Social Workers

The Smith College Training School for Social Work announces the program for the summer session, July 5 to August 30, covering psychiatry and medical social work as well as community service. Prof. C. G. Woodhouse gives a course in industrial problems, Prof. Kimball, in government as a factor in social work, and Dr. Williams and Dr. Houston, social psychiatry.

# World Health and the Rockefeller Foundation

## Disease Disregards All Boundary Lines, and So Does Pure Science in Tracing Cause and Effect

By GEORGE E. VINCENT, PRESIDENT, THE ROCKEFELLER FOUNDATION, NEW YORK CITY

THE Rockefeller Foundation was chartered in 1913 "to promote the well-being of mankind throughout the world." While thus broad in its possible scope, the Foundation has restricted its activities mainly to medical education and public health. In order to accomplish lasting results, specialization is necessary, since small sums spent on a multitude of objects relieve but do not remedy. The International Health Board, the China Medical Board, and the Division of Medical Education are agencies created by the Foundation to administer different phases of its work.

### Public Health and Education

The methods employed are demonstrations carried on in cooperation with governments and educational institutions, or contributions to carefully prepared plans of development. The aim is not permanently to assume government functions, but either to convince established agencies that certain policies and procedures are both effective and feasible or to aid them to extend and strengthen their work.

The control and prevention of hookworm, malaria, and yellow fever, a campaign against tuberculosis in France, the improvement of local and national health administration, the professional training of public health officials, studies of various problems in preventive medicine, aid to medical schools in the United States, Canada, England, Belgium, China, Brazil, emergency aid to medical schools of Central Europe, University fellowships in public health and modern medicine for students, are the leading features of the present program of the Rockefeller Foundation.

### Hookworm Control

First in point of time among the diseases to be dealt with by the International Health Board of the Rockefeller Foundation, hookworm disease still remains its chief activity so far as area covered, funds expended, and personnel employed are concerned. The disease is widely prevalent in tropical and semi-tropical regions. The typical methods em-

ployed include a preliminary survey to determine the degree of infection, the organization of dispensary units for treating the population, the carrying on of educational campaigns, and the introduction of sanitary procedures which will prevent the pollution of the soil and the reinfection of the people.

Although hookworm control is in itself an important end, the Foundation has from the outset regarded these campaigns as chiefly a means of educating communities in the possibilities of public health. Having achieved this aim,—the development of permanent agencies and county health organizations capable of assuming entire responsibility for carrying on the work—the Foundation plans an early withdrawal from hookworm activities in the southern states of the United States. In many places, notably in Brazil, Australia, and some of the southern states of the United States, hookworm control has expanded into general programs of sanitation and preventive medicine.

### Eradicating Yellow Fever

In 1916 General William C. Gorgas, well known for his achievements in the sanitation of Havana and of the Panama Canal Zone, headed a Yellow Fever Commission under Foundation auspices to Central and South America. After first hand investigation the Commission reported that the seed beds of yellow fever were limited to a few centers: Guayaquil in Ecuador, Merida in Yucatan, suspected areas between Pernambuco and Bahia in Brazil, and possibly certain regions on the west coast of Africa. The Commission recommended that an attempt be made to eradicate yellow fever from these endemic foci. Arrangements had been made early in 1917 to undertake this task, when the entrance of the United States into the war compelled the postponement of the plan.

### Yellow Fever Germ Discovered

In 1918 General Gorgas retired as Surgeon General of the Army and assumed the directorship of the yellow fever campaign of the Rockefeller Foundation. As a preliminary to

practical field work, a special commission was sent to Guayaquil to investigate the causes of yellow fever. Dr. Hideyo Noguchi of the Rockefeller Institute for Medical Research was the bacteriologist of this Commission. He made a series of experiments and investigations which resulted in the isolation of a minute organism to which he gave the name *Leptospira icteroides* or "slim spiral, the jaundice maker." Later experiments in Yucatan, Guatemala, Salvador, and Peru have confirmed the results of the investigations in Guayaquil, so that it seems altogether likely that the germ of yellow fever has been identified. A serum and a vaccine prepared as a result of these researches have so far given encouraging results.

### Campaign in Guayaquil

Field work in Guayaquil was undertaken in December, 1918. A systematic and thorough attack upon the breeding places of the *Stegomyia* mosquito was undertaken. During 1918 more than 450 cases of fever had been recorded. As a result of anti-mosquito measures the number of cases fell from 88 in December, 1918, to 37 in February, 1919, to 13 in March, and to zero in June.

### Extending the Fight

A representative of the Foundation visited the east coast of Brazil, where the Brazilian government is dealing with sources of infection in the region between Pernambuco and Bahia. The complete elimination of yellow fever from Rio de Janeiro some years ago shows that the Brazilian sanitarians are familiar with yellow fever control and may be counted upon to carry out their part of the world campaign.

In the summer of 1920 a commission under Foundation auspices headed by General W. C. Gorgas set out for Africa via England to investigate a disease which had been reported as yellow fever in certain areas in the vicinity of Lagos on the west coast of Africa. While in England General Gorgas was taken suddenly ill and never recovered.

After the death of General Gorgas,

General Robert E. Noble sailed for Africa at the head of a group composed of Dr. Juan Guiteros of Brazil, Dr. A. E. Horn of British Colonial Service, and Dr. W. H. Tytler of the National Institute of Medical Research, London. Dr. Adrian Stokes of Dublin, who had previously worked for a few weeks with Dr. Noguchi at the Rockefeller Institute for Medical Research in New York, served as bacteriologist to the expedition.

The Commission found that cases of yellow fever were rare and mild. It concluded, however, that the malady had been both epidemic and endemic in this region and that its epidemicity was greater than any official report would indicate. Plans are under consideration for an extended study of yellow fever in Africa as recommended by the Commission.

Because of unsettled conditions in Mexico, the inauguration of the work in that country has been delayed. However, the Foundation has now accepted the invitation of the government of Mexico and members of the Foundation staff are cooperating with local authorities in an active campaign against the disease in the last of the endemic centers. Through the cooperation of Central American countries, the spread of yellow fever from southern Mexico has been checked and the danger of an outbreak seems to have been averted. It is hoped that the institution of control measures will put an end to dangers of infection from Yucatan and southern Mexico.

### Attacks on Malaria

For the last four years under International Health Board auspices experiments in malaria control have been carried on in Arkansas and Mississippi. Demonstrations in eight different communities have shown clearly that it is possible to control malaria at an installation cost of about one dollar per capita and at a maintenance expense of about fifty cents per capita. Practical measures for combating malaria consist in eliminating mosquitoes, screening houses against them, and in sterilizing malaria carriers by means of quinin. In a given case one or all of these methods may be used, according to local conditions. During the summer of 1920, in cooperation with the United States Public Health Service, state boards of health, and local authorities, demonstrations in malaria control were conducted in forty-four different towns in ten southern states. Experiments in malaria prevention have recently been extended

to typical tropical regions by the inauguration of malaria control measures in Nicaragua.

### Cooperating in West Indies

Hookworm relief and control measures in the West Indies have included surveys and field operations in Antigua; cooperation with government and with planters' associations in British and Dutch Guiana, and typical control programs in Grenada, St. Lucia, and St. Vincent. Surveys in Trinidad showed 75 per cent of the population infected. The Government adopted stringent sanitary regulations which are proving effective. In Jamaica a survey was made in 1918 and control measures inaugurated last year. The Government is enforcing sanitary laws strictly. Surveys have also been made in Porto Rico, Santo Domingo, Barbadoes, and Cayman Islands.

Other states of South and Central America, including Brazil, Costa Rica, Guatemala, Nicaragua, Panama, and Salvador, have been surveyed and have instituted remedial measures.

### In the Far East and Africa

The Far East has not been neglected. In Ceylon 98 per cent infection was discovered among the estate laborers. This has resulted not only in curative measures but in radical improvement in sanitation. Surveys in Papua and in Queensland have led to a large undertaking which is likely to extend to the whole of Australia. A cooperative five year program has been adopted which aims at activities in the entire field of public health. In the Madras Presidency of India a hookworm campaign has been carried on during the past year. Since February, 1918, control measures have been under way in the Seychelles Islands, the Federated Malay States, in Java, and in Fiji. From 1913 to 1915 hookworm prevention was undertaken in Egypt. As a result of war conditions, this work was abandoned. Surveys or actual operations have been made or planned for Mauritius, Borneo, Straits Settlements, Tonga Islands, and Tobago.

### Training Health Officers

The need for an expert personnel early impressed the officers of the International Health Board with the necessity of training persons to supervise and administer public health work. The Foundation has therefore provided funds for establishing at Johns Hopkins University in Baltimore, a School of Hygiene and Public Health in which a thorough train-

ing is being provided. Not only are essential laboratory and research facilities offered, but arrangements are made by which practical training in the field is secured under the auspices of city, state, and federal health departments. A number of fellowships for men who desire to enter the field of public health service are given. Among the fellows are representatives from thirteen separate governmental areas, including Canada, Mexico, Brazil, England, France, Belgium, China, and Czecho-Slovakia.

### Medical Education

The interest of the Foundation in public health has led logically to a concern for fundamental medical education. It is obvious that the progress of preventive medicine is dependent not only upon the training of public health officers, but upon the attitude of the medical profession in general toward prevention of disease. The Foundation, in cooperation with the General Education Board, also established by Mr. Rockefeller but limited by its charter to gifts within the United States, has made appropriations to the University of Chicago, is establishing a modern medical center in Peking, and has made liberal grants to medical education in Canada, England, and Belgium, and has plans for aid to medical education in other parts of the world.

### Medical Center in China

The China Medical Board administers the work which is being established in China on a rather generous scale. The Peking Union Medical College has a hospital, an out-patient service, ample laboratory facilities, a pre-medical school for the preparation of students, and a teaching staff of foreigners and of Chinese who have been well trained in the United States, Canada, and Europe.

The aims of the college are to offer a thorough education for general practitioners, graduate courses for the training of teachers, investigators and specialists, and brief courses for medical missionaries and other physicians. Opportunities for medical research, especially into diseases peculiar to the Orient, will also be provided. Attempts will be made to promote a general knowledge of the spirit and methods of Western medicine and the importance of preventive medicine. Aid is being given to a number of hospitals in different parts of China and fellowships are being granted both to Chinese students and to missionaries on furlough, in order that they may pursue

advanced courses in Western University medical centers.

### Canadian Medical Schools

In accordance with a suggestion of Mr. John D. Rockefeller in connection with a recent gift to the Foundation, a preliminary survey of medical education in Canada has been made with a view to the distribution of five million dollars to certain medical schools in the Dominion. Gifts amounting in the aggregate to three million dollars have been made to the medical schools of Dalhousie University, Halifax; McGill University, Montreal; University of Toronto, and University of Manitoba, Winnipeg. The University of Alberta, Edmonton, and the Université de Montreal are being given aid on a yearly basis while their medical schools are in process of reorganization.

### Aid London Medical School

To enable the University of London to cooperate with the University College Hospital and Medical School in increasing facilities and endowments and in unifying more closely

on the same site the laboratory and clinical facilities needed for a thoroughly modern medical school, the Foundation has made a gift of approximately five million dollars. This will be used for an Institute of Anatomy, an obstetrical unit, a nurses' home, the remodeling of the present hospital, and also for providing a substantial increase in annual maintenance.

### Reorganization in Brussels

The Foundation has recently announced a gift of \$3,500,000 to the University of Brussels to enable it to carry out a plan of thorough reconstruction and reorganization. A municipal hospital will be entirely rebuilt, laboratories now two miles away will be housed in new buildings on the hospital site, a nurses' home and training school will be built, additional endowment provided, and an entirely new régime inaugurated. A group of able medical teachers, the hearty cooperation of the municipality, and the loyal approval of the public make the outlook most encouraging.

The war against disease is a world war. Commerce carries dangerous infections as well as goods and ideas. The health problems of the remotest land concern all peoples. More and more nations are coming to recognize their interdependence in health as in industry, government, science, and culture. There are even now foreshadowings of world wide cooperation in combating the maladies which have long threatened humanity. For this new campaign leaders are needed to extend the frontiers of medical science, to teach, to organize, to administer.

Demonstrations are required to convince communities and nations that diseases can be controlled and even eradicated. The Rockefeller Foundation, enlisted for this world wide campaign against disease, is cooperating with many agencies in five continents, hopes to foster the growth of international confidence and good will, and is thus seeking the fulfillment of its chartered purpose—"to promote the well-being of mankind throughout the world."

## What Is a Health Center?

By E. A. PETERSON, M.D., NATIONAL DIRECTOR, HEALTH SERVICE, AMERICAN RED CROSS, WASHINGTON, D. C.

**D**EFINITIONS of the Health Center are as numerous and varied as the kinds of health workers who have come in contact

was associated, and has used it accordingly. This widespread use of the health center in many different ways is a testimony to the value of

influences radiate, a place where the health of the community is studied and promoted." That is a good definition but stated in too general terms.



The one room health center groups its educational, informational material to meet the requirements of ready use. It is a clearing house which everyone uses.

with this form of health organization. In accepting the idea each worker has described it in terms of the particular phase of health work with which he

the health center as a health institution.

Someone has stated that "the health center is a place from which health

The health center, having a definite rôle to play in the health field, ought to be more explicitly defined. This is an attempt at such definition. It



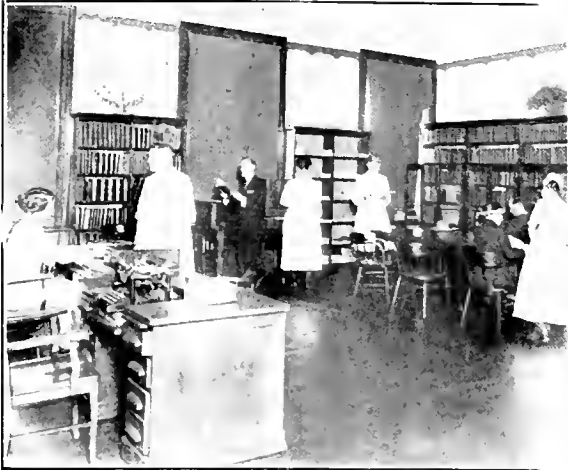
must be kept in mind that the term "community health" covers the field in which all the health agencies—health officers, private physicians, schools, hospitals, sanatoriums and private health agencies—function usually independently. It is broader

community health interest—down to single rooms which are still expressions of that interest and forerunners of more adequate quarters.

### Functions of Health Center

*Functionally*, the health center is

their services and information. It is probably true that most communities are getting "less than half the service from existing health agencies that these agencies could and would render." It is also true that there is some duplication of work.



The Public Health Center consolidates, administers, and increases efficiency in the Department of Social Service.

Day and evening clinics provide that all classes of the people may have access to the service.

than the field usually included in the term "public health."

### The Physical Health Center

*Physically*, the health center is a building, rooms, or room, centrally located in the community. The center may contain the offices of all the health agencies operating in this district, the health department, medical and dental societies, school medical inspection, and such private health agencies as the Visiting Nursing Association and the Anti-Tuberculosis Society. It may include clinics operated by any of these agencies. It also may include equipment for demonstration and education in health matters.

On the other hand, the health center may be a single room where information on health is dispensed—information which aims to put the people of the community in touch with their health facilities—and where the community is organized to study and promote its health work. It is conceivable that the health center idea can be promoted without the central building or rooms, but experience has shown it to be so much easier to work out the idea from a physical center that one should always be established. The provision of such a physical center saves the time, expense, and energy of all concerned—the health agencies and the public.

At the present time these physical centers range from huge memorial buildings—beautiful expressions of

*an institution through which the community may get in touch with all health promoting agencies and with the health problems of local and of national importance.*

There are at the present time four great health forces operating in any community; these are, (1) the legally constituted authority, (2) the private practitioner, (3) the schools, and (4) national and local private health agencies. All of these forces are operating independently—so far as authority is concerned—towards better health for the community. Each has a field more or less clearly defined. The health center is a point of contact between the community and these agencies. It offers an information service, free to all, which puts any person in the community in touch with the agency he especially needs. It describes and pictures to the community the services available from all the agencies operating there, and it pictures to the public the health needs of the community as they are seen by the health agencies operating there. It is an institution for "health education" in the broadest sense of the term. The health center makes special effort to supplement the work of existing health agencies, enlisting in those phases of health work which can be done by volunteers the members of the community who have time and aptitude for such work. The health center is an institution through which the existing health agencies may bring close to the community

By and large, community health agencies give to the community just about what the community will accept. The health officer is usually a little bit better officer than the community wants him to be and the doctor a slightly better practitioner than the community demands. Both assume leadership, but do not dare get too far ahead of the community. Both want to see the community demand a higher type of health work, or at least permit a higher type of work. Each has made attempts to bring this about, but always as health officer or doctor; and too often the attempts failed because the community looked upon them as "partisan" movements.

The health center representing the health interests of all concerned—that of the community as well as those of technical health workers, and the community often *thinks* those interests are not identical—is in much better position to successfully present, in proper light, the different agencies to the community.

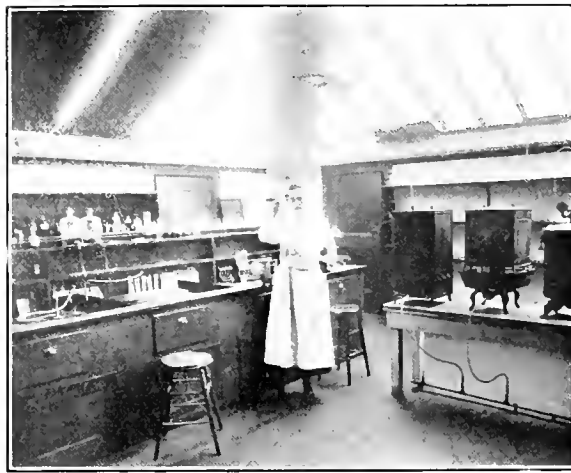
### Administration and Control

By bringing together the operating health agencies, the health center promotes knowledge by each of the others' work, elimination of duplication, consideration of health problems, and promotion of needed health work.

Administratively the health center should be under the combined guidance and control of all of the health



At the Alameda County Health Center the nucleus of an efficiently administered medical library is a definite service to the local physicians. The medical group is thereby unified and stimulated.



The scientific practice of medicine is promoted by rapidly available laboratory service for consultant and clinical staffs. Such an arrangement serves the best interests of both physician and client.

agencies. The health center must not be interested in movements towards health control by any one agency; it must seek to do good under the conditions that exist, must coordinate agencies and provide such administration as will best conserve the interest of

all of the health agencies in the field.

### Summary

In short, the health center is a community health organization standing for creative health work, which aims to coordinate the efforts of all health

agencies, bring the services of all agencies to the attention of the public in such a way that they are used, "bring the community to demand, and stimulate the community to work for a higher and higher type of health service."

## National Research Council and Health

BY VERNON KELLOGG, PERMANENT SECRETARY, NATIONAL RESEARCH COUNCIL, WASHINGTON, D. C.

THE National Research Council is, as its name indicates, a national although not governmental organization, interested and active in the promotion of scientific research in the United States. Indeed, its interest is even wider, for, through its affiliation with the International Research Council, organized since the war at a meeting in Brussels of accredited representatives of national scientific academies and councils of various countries, it is directly participating in certain international research activities; but its prime interest is in the encouragement and support of scientific research and the practical application of research for the benefit of the American national strength and welfare.

The Council was established under the auspices of the National Academy of Sciences during the war, to help mobilize the scientific personnel and material resources of the United States for the benefit of the government in connection with war time problems involving the need of scientific investigation. The work of the Council during the war proved so useful that President Wilson, in an Executive Order issued in May, 1918, asked that the Council become a per-

manent body for the sake of continuing its special function of encouraging and organizing American scientific effort, especially by promoting cooperation in attack on large scientific problems directly related to the national well being.

### A Self-Supporting Body

The Council, as at present reorganized for peace time work, is entirely self-governing and finds its support from private, not government funds. It has been given an endowment which provides sufficiently for its current administrative expenses and is in constant receipt of other gifts devoted to the initiation, organization, and support of special research projects. Much of its special work, however, entails but little expense and is supported by its funds for general administration.

Its membership consists chiefly of accredited representatives of more than forty major national scientific societies of the country, together with a number of other members representing large public interests, especially industrial and technical. It comprises a series of divisions representing the various special fields of pure and applied science, such as

chemistry and chemical technology, the physical and mathematical sciences, geology and geography, biology and agriculture, anthropology and psychology, engineering, and medicine; and another series representing the general relations of the Council to similar foreign bodies, to government and state scientific bureaus, to the universities and colleges, etc.

Among these, it is the division of medical sciences through which the interests and activities of the Council are especially related to problems of national health, although the activities of certain other divisions touch also certain phases of the larger health problems. Each division has a chairman, resident, for the term of his office, in Washington, and is composed of a group of leading scientific men representing the special subject of the Division's interests. The present chairman of the Division of Medical Sciences is Dr. George W. McCoy, director of the hygienic laboratory of the United States Public Health Service, and the executive committee of the Division is composed of the following well-known medical authorities: Frederick P. Gay, professor of pathology, University of California; Henry A. Chris-

tian, Hersey professor of physics, Harvard University; Simon Flexner, director of the Rockefeller Institute for Medical Research; W. H. Howell, professor of physiology, Johns Hopkins University; Reid Hunt, professor of pharmacology, Harvard University; and Victor C. Vaughan, dean of the medical school, University of Michigan. Among the members of the Division are officially appointed representatives of the American Association of Anatomists, American Neurological Association, American Physiological Society, American Medical Association, American Roentgen Ray Society, American Society for Clinical Investigation, American Society for Experimental Pathology, American Society for Pharmacology and Experimental Therapeutics, American Society of Biological Chemists, American Surgical Association, American Veterinary Medical Association, Association of American Physicians, and the National Dental Association.

Ever since its organization the National Research Council has felt that the field of public health should receive its serious attention. It has made a general survey in the United States and finds numerous agencies already engaged in research in this field. Some of these agencies, such as the various bureaus of the Government, the Rockefeller Foundation, and the School of Hygiene and Public Health of Johns Hopkins University, are reasonably well supplied with resources. Some others, especially state and municipal bureaus, are usually less well equipped, but still are in position to carry on much useful research. Still others are badly lacking in equipment and competent personnel.

### Aids Research Projects

As the National Research Council maintains no active operating laboratories of its own, its relation, through its Division of Medical Sciences and other divisions, to public health research, must be limited to the endeavor to initiate and organize research projects not now being undertaken but needed. It will attempt to obtain the cooperation of men and laboratories, especially suited for carrying on these projects, and to help find the necessary funds for their maintenance. If necessary, the Council, through committees of experts, will help supervise any such projects organized by it.

The Division of Medical Sciences has already set up several special committees for the planning and su-

pervising of particular projects of investigation and has lent its support to other undertakings suggested from outside sources. An excellent program for research in nephritis has been worked out. The requirements of this project in the way of funds are large, and these funds have not yet been obtained. It seems relatively easy to secure means for investigations dealing with infectious diseases, but it is much more difficult to interest foundations or private individuals in position to support research in investigations in the chronic diseases, which are nevertheless very important as a cause of invalidism and which contribute largely to swell mortality figures.

The Division is now developing a plan for certain fundamental nutritional investigations having especially in view the biochemical studies of persons suffering from various degrees of under-nutrition. This project is practically assured of financial support.

The attitude of the Council toward medical research and the advancement of medical science, is that the most significant results will be obtained from an attention to fundamental matters. Some of these matters may even not appear, at first sight, to be immediately pertinent to practical medicine. For example, the Council is administering a large gift for the establishment and maintenance of a number of research fellowships in physics and chemistry. Some of the work of these research fellows—especially the work of the fellows in chemistry—may be of great importance to fundamental medical science. The Council's Division of Biology has an important Committee on Food and Nutrition. Out of the researches initiated and supervised by this Committee will come results of much significance in public health problems.

### Study the Mind and the Body

The Division of Anthropology and Psychology, in cooperation with the Division of Medical Sciences, is formulating a plan for extensive research in nystagmus and the function of the semi-circular canal. The outcome of these studies also will have fundamental value in connection with public health. The Division of Psychology is also devoting much attention to a study of tests of students having in view the possibilities of the prediction of success in special vocations. The work so far undertaken has chiefly concerned students of medicine and of engineering. If

such tests are found to give indications of value, their use may be very important in medical schools.

The Council maintains a Research Information Service which is equipped to furnish directly general information and specific data on various public health problems or to put the inquirer into immediate contacts with the best sources of the information desired. This service is provided free of charge, except in cases where unusual work is required to secure the information asked for, and the charges then are limited to the actual expense incurred in obtaining the information.

Altogether the National Research Council, through its close connection with the government bureaus and the major societies interested in medical and public health research and with the leading investigators of the country, and by reason of its efficient organization for setting up and supporting cooperative undertakings of needed investigation, is in a position to render useful service in connection with the public health problems of the Nation. And it confidently hopes to render this service.

## Chicago Resolutely Faces Her Health Facts

Health Promotion Week, observed throughout the state of Illinois the week beginning April 17, was made in Chicago the occasion of a systematic survey of health conditions as the basis of intelligent health programs to be made effectual throughout the year. Sunday in the churches exemplified in Biblical texts the religious and social sanction of the earliest sanitary laws. Monday enlisted local popular interest in community "Clean-Up." On Tuesday, through the authority of local health officials, special emphasis was directed toward fly, insect, and rat extermination. Wednesday was "Better Babies" day. "Birth Registration" day on Thursday marked an effort to locate every unregistered child in the community, and to check discrepancies of local records of the birth of children now less than one year old. Friday, "School Children's" day was observed in special health programs arranged in such a way as to inculcate health habits in the children, interest being stimulated by offering suitable prizes.

Saturday was "Medical Examination" day, and the purposes of its activities brought out the advantage of annual medical examinations to disclose organic diseases in their incipient and curable stage.

# The Health Department at Flint, Michigan

## Health Departments Make Spectacular Growth When Attempt is Made to Keep Pace with Local Needs

BY WILLIAM DEKLEINE, M.D., HEALTH OFFICER, FLINT, MICHIGAN

THE city of Flint, Mich., is a rapidly growing industrial town, with automobiles and accessories as the chief industry. The census figures show that the city has grown from about 38,000 to nearly 91,000 since 1910. Until three years ago the city health department was in charge of a part time health officer at a salary of approximately one thousand dollars a year. The other employees in the department were one visiting nurse, one dairy and food inspector, three sanitary officers, one plumbing inspector, and one clerk. The annual appropriation in the city budget for the department was about \$15,000.

### Scope of Work Broadens

In May, 1917, a full time health officer was appointed and placed in charge of the work under the supervision of the former Board of Health consisting of two members. That same year money was appropriated for a bacteriological laboratory, but none for expansion along other lines. The following year, 1918, the budget was increased to about \$25,000; in 1919, to about \$45,000; and in 1920, to about \$80,000. The department has grown and expanded a little each year, till at the present time it has thirty-one full time employees, of whom three are physicians, five dentists, eleven visiting nurses, two bac-

teriologists, three dairy and food inspectors, three sanitary officers, two plumbing inspectors, one stenographer, and one clerk. Besides this number the Board of Education of the city employs eight school nurses. Three years ago the department was located in one room in the city hall; at present it is occupying an entire building known as the "Health Center" and it is one of the busiest municipal organizations in the city.

The scope of the work has broadened considerably in the last two years. The department is now organized along the following lines: A Division of Communicable Diseases; Dairy and Food; Laboratory; Visiting Nurses; Vital Statistics; Public Sanitation; Plumbing Inspection; and a Clinical Division.

The clinical division includes the following: Dental clinics principally for school children with five full time dentists in charge; medical clinics for school children with one full time physician in charge, designated as the school physician; a general clinic for people in poor financial circumstances; and also a clinic for drug addicts with one full time physician in charge, designated as the city physician.

The dental clinics are open all day from 8 a. m. until 5 p. m. The school physician and city physician have cer-

tain office hours every day during which time patients who belong in the above named groups can come for consultation, the hours being so arranged that one or the other physician is here during the entire day.

The other clinics are the tuberculosis clinic; eye; ear, nose, and throat; prenatal; orthopedic; venereal; gynecological; and a nervous and mental disease clinic. Each one of these clinics is conducted by one of the local practising physicians who specializes in the particular branch of which he has charge. During the summer months four additional infant welfare clinics are conducted in school buildings in different parts of the city in charge of the school physician and one or two of the local physicians.

### Clinical Work Unique

No attempt will be made to describe the work of all the divisions of this department, but this paper will be limited to a description of the activities of the clinical division. The work in the other divisions is along the usual lines, perhaps not differing from that of other health departments in cities of this size. The work in the clinical division is different, perhaps unique, because it is organized for the purpose principally of correcting physical defects in school children. We emphasize children be-



Three years ago the Health Department of Flint, Mich., occupied one room in the city hall. It now occupies an eighteen-room building and is now one of the busiest municipal organizations in the city.



Nutrition clinics looking toward giving the babies a right start, and affording the necessary guide and supervision of the mothers, constitute an important service at the Health Center of Flint, Mich.



Chief emphasis is placed on the work with the children, as the best opportunity for preventive medicine.

This room is devoted to the treatment of venereal disease. Day and evening clinics are held.

cause we believe that whatever work is done for them in a corrective way is more far-reaching in its final results than similar work among adults; although we aim also to do considerable corrective work among adults who would otherwise be neglected. We believe that the biggest opportunity in preventive medicine lies in this field, especially in the elimination of focal infections wherever possible; because this work has been neglected.

The health department is housed in a building which was formerly a large residence. It is located in the center of the town, one block from the main street. The lower floor is used for the department administration and for all the divisions except the laboratory and the clinical division. The laboratory is located in the hospital which is a municipal institution, and serves both the hospital and the health department.

The clinical division occupies the entire second floor of the building. This floor has a waiting room, two dental rooms with three chairs, two clinic rooms used by the physicians for examination rooms; on treatment room for venereal diseases; a sterilizing room, and a record room and nurses' office. The clinical division is placed under the general direction of the school physician, since most of the work has to do with school children.

The common council has recently appropriated funds for a substantial

addition to the rear of this building. The work is about completed.\* This addition will have a well equipped operating room, sterilizing room and a hospital ward room with space for seven beds. It will also have space for the erection of x-ray equipment, four additional clinic rooms, and a treatment room for venereal diseases. This addition will also make space available in the building for a reading room for physicians. It is planned to organize a medical library in connection with this reading room and it is hoped that in a few years a well selected library will be collected for use by physicians, dentists, and nurses.

The operating room will be used principally for nose and throat surgery, dental extractions under anesthetics, orthopedic surgery, and emergency surgery. This room will also be made available to physicians in private practice. It will give them a place to do such surgery as is frequently done in their offices, under better aseptic conditions and with competent assistants, without compelling the patient to go to the hospital. The operations will be scheduled if possible in the morning and the patients removed to their home in the afternoon. A small charge will be made for the use of this room.

During the course of the year every

\*The new addition has been completed since this paper was prepared. The operating room and additional examination and treatment rooms are now in use.

child in the school grades is examined by the school physician and by one of the dentists. Notes are sent to parents as to the conditions found and through a system of "follow-up" work the parents are interviewed by the school nurses. The financial circumstances of the parents are also investigated at the same time and every effort is made to induce them to have the necessary corrective work done either through the private physician or dentist or through the clinic.

In point of numbers the largest service is rendered in this clinical division, through the dental clinic, and it is necessary that this is so because by far the greatest number of defects in children are found in the teeth. While from 20 to 30 per cent of school children in the grades have diseased tonsils and adenoids and about 10 to 20 per cent defective vision, 85 to 95 per cent have defective teeth in some form or other. It will require a far greater number of dentists to correct teeth defects than physicians to correct other physical defects. It often requires several hours to treat the teeth properly and a comparatively much shorter time to remove tonsils and adenoids, or to refract the eyes, etc. It is also much easier to get the consent of parents for dental work than to have other operative work done. Therefore, there is a much greater need and call for dentists than physicians to do corrective work

among school children. With three full time dentists on the staff last year we were able to give free dental care to about twenty-five hundred school children. The work on the dental clinic is done almost entirely by appointment, similar to the handling of work in a private office. The children are given appointments by the school nurses and it is their duty to see that their appointments are faithfully kept. In this way the offices are never over-crowded with applicants nor idle for lack of them. Not all the dental work is done at the central clinic. Some branches have been established in the outskirts of the city.

The teaching of dental hygiene alone is not going to have a very large influence upon the health of the children unless we also correct their dental defects and all mouth defects.

Our department is now organized to give free dental care in this coming school year to about 35 per cent of the school children in the grades. The dental society of this county is in hearty accord with this work as is evidenced by a resolution recently passed by the society endorsing the work of the Health Department in establishing free dental clinics.

Occasionally I hear the opinion expressed that this school work will interfere with the work of dentists in private practice. Dentists in this city are doing more work for school children at the present time than they have ever done before. The records of the school nurses show a marked increase in this respect. They are also becoming more interested in this branch of dentistry. One dentist in our city is specializing in work for

However, I do not want to leave the impression that we do other corrective work free for all school children. We try to direct them to their physician or to the clinic if such work is necessary.

As stated above, we are organized to give every child in the grades a physical examination during the course of the school year. This examination includes the eye, ear, nose and throat, teeth, the chest, bone deformities, skin diseases, etc. The examinations are made at the schools. The children are taken out of the class room just long enough to give them a routine examination. Any of the children who are found to be apparently subnormal and who in the opinion of the physician require a more careful examination are referred to the clinic at the Health Center. One of the parents usually accompanies them. In this way we are able to give them a more careful and complete examination, and give the parents better directions as to the treatment.

I do not want to convey the idea that all our clinics are conducted for the benefit of school children. The tuberculosis, venereal disease, prenatal, gynecological, nervous and mental diseases and drug addict clinics are necessarily almost entirely for adults. These are conducted by local physicians under the general supervision of our city physician. The routine work such as writing of histories, filing of records, preparation of the patients, etc., is done by the nurses in charge. In this way we are assured of more regularity and promptness in carrying out all the necessary details. We aim to conduct a well regulated series of clinics.

### Clinic Schedule

#### Baby Clinic

Tuesday—3:00 p. m.

Daily—3:30 p. m.

#### Dental Clinic

Daily—8-12 a. m. and 1-4:30 p. m.

#### Eye Clinic

Tuesday and Friday—8:00 a. m.

#### Tuberculosis Clinic

Friday—1:30-3:00 p. m.

#### Prenatal Clinic

Thursday—10:00 a. m.

#### Orthopedic Clinic

Wednesday—9:00 a. m.

#### Mental Hygiene Clinic

Saturday—8:00 a. m.

#### Gynecology Clinic

Thursday—10:00 a. m.

#### Venereal Clinic

#### Women:

Tuesday and Friday—8:30-9:00 a. m.

Tuesday evening—6:30-7:00 p. m.

#### Men:

Monday and Thursday—8:30-9:00 a. m.



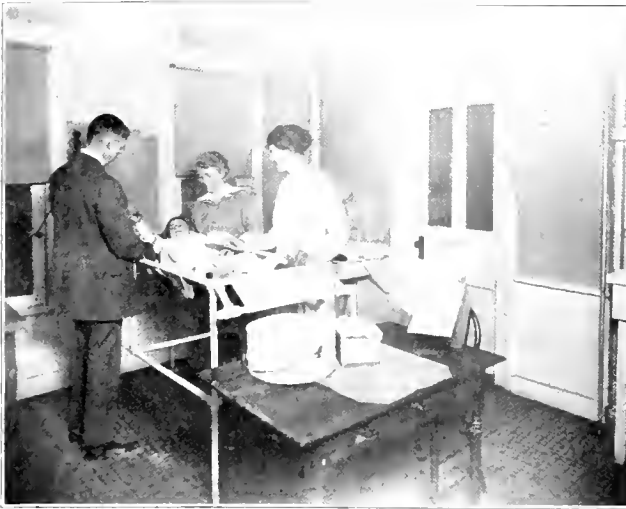
Management favoring the normal development of the child is the special function of the Child feeding clinic. Medical and nursing care is not half so important as the provision of a system which insures for all children in the community uniform and adequate nutrition.

Hundreds of our school children have badly infected mouths resulting from dental caries and there is no opportunity offered anywhere to have this corrected. The average dentist in private practice is not interested in doing preventive work for children, either because he does not realize the importance of it or because he cannot see as big financial returns from that class of work as from adults. For that reason if we ever hope to remedy these conditions in children it is up to the community to do so.

children and he is kept busy all the time. If we give free dental care to our children and can preserve their teeth until adult life, we have made them ardent advocates for proper dental care. Free dental care among school children increases the work for private dentists.

This applies equally well to physical care along other lines. I can think of no better way in which to increase the work of the private physician than by doing free medical work among our school children.





An orthopedic clinic is one of the most important adjuncts to the "Health Center," making it possible to carry out the long and arduous treatment necessary.



The personnel of the Health Department of Flint, Mich., includes thirty-one full-time workers, besides which number the Board of Education employs eight school nurses.

Friday evening—6:30-7:30 p. m.  
General Clinic  
Daily—9:00-10:00 a. m. and 2:00-4:00 p. m.  
Clinic for School Children  
Daily—3:30-5.00 p. m.

The schedule above gives the time when these various clinics are held.

They are so arranged that they will not interfere with each other or with any of the other regular work of the clinical division. Two nurses or frequently three are in attendance all the time. The present average attendance is about eighteen hundred visits

a month. This does not include the work done outside in the school and infant welfare clinics. These are visits in our clinical division at the Health Center which is strictly a civic enterprise. It is a popular effort to achieve a complete service.

## Compensation for Industrial Disease

**E**IGHT jurisdictions — California, Connecticut, Hawaii, Massachusetts, New York, North Dakota, Wisconsin and the Federal Government—provide compensation for occupational diseases of the forty-six having compensation jurisdiction, according to a study published by Carl Hoopstadt in the February issue of the *Monthly Labor Review*. In Massachusetts, North Dakota, and the United States, the inclusion was brought about by the commissions and courts and in the other states by statutory enactment. The reports and investigations show that the maximum cost of occupational diseases, if included in the workmen's compensation acts, would not be greater than 2 per cent of the aggregate cost of industrial accidents and would probably be less. Under the Federal Compensation Act for the year 1919 there were 19,354 injuries, with 299 cases of disease, that is, 1.5 per cent. In California for the same year the total injuries were 58,577, with 670 injuries from poisonous and corrosive substances, or 1.1 per cent of all injuries, and 455 cases of industrial disease, or 0.8 per cent of all injuries. In Massachusetts for the period 1915-1919, there were 1,738 cases of fatal injuries, 51, or 2.9 per

cent, occupational diseases; 290,920 non-fatal injuries, with 3,788, or 1.3 per cent, occupational diseases.

The term "occupational disease" may be classified by cause and nature of injury: Diseases due to the gradual absorption of poisons (lead poisoning); diseases in which the poison or germ enters the system through a break in the skin (anthrax); skin affections from acids or other irritants (eczema, dermatitis); diseases due to fumes or dusts entering the system through respiratory organs (tuberculosis, gas poisoning); diseases due to vibrations or constant use of particular members (neuritis, telegrapher's cramp, housemaid's knee); and miscellaneous diseases (caisson disease, miner's nystagmus). In addition to these, compensation is usually granted for typhoid fever, erysipelas, pneumonia, and ivy poisoning, which arise from and are proximately caused by employment. To be compensable, they must be directly traceable to the employment. Diseases arising from, accelerated or developed by an accident, are compensated, not for the disease *per se*, but the results of the accident. Had the accident not occurred, the disease would presumably not have developed;

hence the disability is directly attributable to the accident.

In some states, where the compensation laws do not cover occupational diseases, the courts and commissions have awarded for most of the diseases enumerated; if the disease resulted in violence to the physical structure of the body, i. e., if traumata a production of a lesion; if injury accrued unexpectedly or not in the usual course of events; if the injury can be traced to a definite time and place in the employment; and if the injury was not due to a known and inherent risk of the occupation; or, even if inherent in the occupation, if the employer had neglected reasonable safeguards which presumably would have prevented the injury.

### Health Certificates Before Marriage

A bill has been introduced into the Michigan state legislature requiring all persons applying for marriage licenses to present a licensed physician's report of the physical condition of each applicant. Persons afflicted with venereal diseases, epilepsy, or "open" tuberculosis are barred from contracting marriage.

# Universal Physical Education is Essential

Health a By-Product of Physical Education.  
Universal Training Safeguards the Future.

BY HONORABLE ARTHUR CAPPER, UNITED STATES SENATOR FROM KANSAS, Washington, D. C.

OUR national pride received a severe jolt with the publication of the draft statistics showing more than 35 per cent of the young men examined physically disqualified from full military activity. On the heels of this announcement came the publication of the equally startling results of various surveys relating to the health conditions of school children. It was alleged that not more than 25 per cent of the school children of the nation could be regarded as fully fit, physically.

These revelations have roused a widespread interest and study of the problem of how best to set in motion the processes which will successfully combat this unsatisfactory condition. While it is recognized that many of the activities in peace time do not require the degree of physical perfection needed for effective military service, yet we cannot deny that the conditions revealed indicate a material sapping of the energies of the nation for industrial, agricultural, and professional activities in peace time.

## Compulsory Military Training

The advocates of a continuous program of compulsory military training for all young men between the ages of eighteen and twenty-one have argued that in addition to strengthening the nation for national defense, such a program would facilitate the effort to overcome the physical deficiencies revealed by the draft. I have expressed myself openly as being opposed to the proposal for compulsory peace time military training. I regard this as a matter to be considered mainly from the standpoint of providing the adequate defense of the nation. I am against such a program because I regard it as unnecessary in providing for the adequate defense of the nation and because of the tremendous expense involved.

If we cannot justify compulsory peace time military training as a necessity for national defense, we certainly cannot justify this plan—involving an expenditure of at least five hundred million dollars—as a means for promoting the physical fitness of the nation. In the first place, it

would apply only to the young men, and I am thoroughly convinced that whatever we may do in providing better opportunities for health and physical efficiency should be extended also to our young women. Furthermore, it is true that the basis for ill health and inadequate physical development, when they appear in later life, has usually been established previous to the eighteenth year. No extended argument is necessary to prove that we cannot, in a period of six months' military training at the age of nineteen, overcome the results of ignorance and neglect during the earlier years.

## Educate the Young

I would not advocate universal physical education as a substitute for compulsory military training in providing for national defense. However, I am convinced that the most hopeful method of improving the health and physical efficiency of the nation is not to be found in the establishment of compulsory military training at the age of nineteen. Neither do I believe that we can hope for much progress in mere efforts to discover and correct the physical defects now existing among children or adults. We must, rather, extend to all the young children adequate training in the practice of healthful habits. We must teach them what and how to eat and the other fundamentals of health, such as the proper amount and conditions of sleep and proper clothing. Furthermore, we must stimulate and guide our children in those physical activities which incidentally yield health and normal physical development. I do not mean by this that we must try to make athletes and gymnasts out of all our children. I do mean, however, that we must carry on the proper supervision of those activities which develop alertness, poise, good posture, and the spirit of team play.

I regard health as a natural by-product of physical education. If space would permit, I might elaborate upon the significance of physical education in the promotion of mental efficiency and sound moral qualities.

We have passed the day when we regard time and money as wasted when spent in guidance of the play of children. We have learned to realize that by promoting happiness and the joyful optimistic outlook upon life we are also promoting productive efficiency. After all, the condition of the spirit determines in large degree the effectiveness with which we work.

## Chance for Each Youngster

We do not need to establish special schools and camps throughout the Nation in order to extend the opportunity of adequate physical education to all the children. We already have facilities for education—school houses and teachers covering the entire land. Through these facilities, about one-tenth of the children are already receiving more or less adequate physical education. The other nine-tenths can be reached by the establishment of physical education as a part of the training program in every school of the Nation. I am firmly convinced that this is a matter which should be primarily in the hands of our educators. Already there is a growing appreciation of the fact that no matter what we may do to train our children in reading, writing, arithmetic, craftsmanship, and agriculture, we are failing to give them an adequate start in life unless we also provide adequate physical education. Without a strong and efficient body, the mental training will be of little value to our youth.

## Federal and State Cooperation

Now if physical education is to be made a fundamental part of education—and I feel sure that this is the only wise method—the major responsibility must rest with the states and local communities. The Federal Government cannot and should not interfere with local and state control of education. It is a bit discouraging, however, to note that in spite of the progress of physical education during the past twenty years, only one-tenth of our children are receiving this training and many of the programs now operating are lamentably inadequate. It is also true that the an-

nual appropriations of all the state legislatures for physical education total less than five hundred thousand dollars.

The Federal Government can, however, through entirely appropriate action, stimulate the more rapid extension of this important training. I believe, furthermore, that without any improper intrusion into the affairs of the states, the Federal Government can help promote economy and effectiveness in the extension of physical education. We must provide for the universal establishment of physical education in our own American way. We do not wish to follow the method of Japan, where physical education was established twenty years ago by imperial edict as part of the program of every school. We do not wish to follow in the footsteps of France, where only recently the national legislature enacted a law requiring that physical education be established for all boys and girls up to the age of sixteen. We shall wish to preserve local autonomy in the determination and administration of programs of physical education, but we shall also find it necessary to add the stimulus of helpful Federal cooperation with the states if we are to secure the establishment of universal physical education within the next twenty years. I do not believe that we shall be less effective than are the poverty stricken nations of Europe in extending this fundamental training to their children, but we shall do it in our own way.

### Physical Education Measure

In the preparation of the National Bill for Physical Education, I have cooperated with Representative Simon D. Fess, who, before entering the United States Congress, was for many years a prominent educator. Advice has been received from many competent physical education authorities. The Bill, which is number 22 in the House and number 416 in the Senate, proposes that the Federal Government shall cooperate with the states in the expense of training and employing teachers of physical education. This cooperation will be extended to those states attaining certain minimum standards specifically described in the Act. These standards are moderate and only sufficient to insure that the Federal appropriations will not be wasted. No arbitrary authority is given to any Federal official or board to impose requirements beyond those specifically described in the Act. The amount available for each state is based upon

the number of children between the ages of six and eighteen. No state can receive more than the amount already appropriated by state and local authorities for the same purposes. In order to continue receiving Federal aid, the states must within five years provide the opportunity of physical education for all persons between the ages of six and eighteen. The total Federal appropriation to be available for distribution is ten million dollars. It is probable that during the first year only a part of this appropriation would be expended.

The Bill provides for the establishment of a Division of Physical Education in the Bureau of Education, which shall be equipped to administer the Act and to cooperate with those states desiring assistance for increasing the quantity and improving the quality of their physical education programs. The United States Public Health Service is authorized to cooperate with the Bureau of Education and with the states in giving technical advice relating to health supervision. I wish to emphasize that the administration of the Act is to be assigned to the Bureau of Education. I believe it is a sound policy to place the responsibility of this program in the hands of the educators and that the relationship of the health authorities should be advisory. I wish further to emphasize that we have included in the Bill a provision making clear that there shall be no discrimination between the various recognized schools of medicine and that nothing in the Act shall be interpreted as requiring minors to receive medical examination or treatment against the expressed wish of their parents or guardians.

### What is Real Economy

The necessity for extreme economy in Federal appropriations is well understood. I regard the physical education bill as an economy measure. Real economy does not always mean simply refraining from expenditures. Wise and conservative investment for the realization of assured profits is one of the wisest forms of economy. It has been conservatively estimated by the United States Commissioner of Education that last year there was a loss of approximately one hundred million dollars in the public schools because of absence of enrolled children due to ill health. The young people in industry under the age of nineteen—who would be affected by the legislation—lost through ill health last year \$71,250,000. These are only two of the readily calculable bills

paid by the nation as the price of ill health and physical deficiency. If we can reduce these amounts alone by as much as 10 per cent, we shall have saved more than the entire cost involved in this legislation. While we are spending hundreds of millions for battleships, I cannot but regard the proposed expenditure of ten million dollars for promoting the physical fitness of our youth as a wise and economical investment.

### Graduated Exercises Prescribed for Cardiacs

Surgeon B. W. Carr of the United States Public Health Service, writes in the *American Journal of Electrotherapeutics and Radiology*, March, 1921, on "Graduated Exercises in Cases of Functional Heart Disturbance," basing his conclusions largely on observations of young men in the army hospitals. Interference with normal action of the myocardium in performing its various functions of conductivity contractility, tonicity, etc., may cause functional heart disturbances so that it is not surprising that under the stress of army life a great many men develop cardiac symptoms sufficiently grave for hospitalization.

There are five grades of exercises used at Walter Reed: Grade I, passive and resistive exercises; Grade II, Active exercises, in lying and standing position; Grade III, Active exercises with coordination; Grade IV, To speed with coordination; Grade V, Walking and slow running, graded. In the lower grades, special efforts are made to induce muscular relaxation and lowering of nervous tension. Rest periods with complete relaxation are frequent. Grades II and III are increasingly vigorous. The type of exercises differed in various hospitals. Grade I exercises used at Lakewood were too strenuous for some of the cases at Walter Reed.

The value of graduated exercises in functional heart disturbances must be conceded, but to obtain good results, treatment must be systematic and under complete supervision. Each case is considered individually and advance in grade only as the condition indicates. Indiscretion of diet or exercise during the rest of the day may nullify the benefits of the treatment. Rest is of the greatest importance. The tendency noted towards an increase in the number of heart defects is best counteracted by a concerted effort to find and segregate the chronic cardiac sufferers and to prevent by a precise régime the progressive damage that results from all advised exertion.

# Locking the Barn Door in Health Legislation

By COURTENAY DINWIDDIE, EXECUTIVE SECRETARY, NATIONAL CHILD HEALTH COUNCIL, WASHINGTON, D. C.

IN EVERY branch of human welfare activity the child has the greatest appeal. This is as it should be, for in the child we have the opportunity to influence the thought, the habits, the health, and the happiness of the next generation. Therefore, it is peculiarly unfortunate if, in planning or working for children, we think chiefly in terms of the sick, the crippled, and the subnormal. For ten years or more there has been a trend in the other direction, toward planning and working for the normal child and the one that is well, with a view to keeping him so. This tendency was at first very slow but is gradually increasing.

"Child Welfare" legislation, however, still deals very largely and in some cases exclusively with the dependent, defective or delinquent child. It often takes comparatively little account of health or of the necessity of working for those conditions and of promoting those habits that shall make it possible for the average child to be sturdy, independent, and happy through the combination of right thinking and right living.

It was for this reason that the National Child Labor Committee, a member of the National Child Health Council, pointed out to the latter the urgent need for information as to desirable health provisions for state laws relating to children. This was in December and a number of State Children's Code Commissions were preparing legislative recommendations, some for use in January. Therefore it was necessary to organize quickly an authoritative committee on this subject. The committee appointed consisted of Courtenay Dinwiddie, executive secretary of the National Child Health Council, elected chairman; James A. Tobey, assistant director, Health Service Department of the American Red Cross, elected secretary; Richard A. Bolt, general director of the American Child Hygiene Association; E. Dana Caulkins, manager, National Physical Education Service; Taliaferro Clark, M.D., surgeon, United States Public Health Service; Edward N. Clopper, assistant secretary, National Child Labor Committee; Anna E. Rude, M.D., director, Division of Hygiene, United States Children's Bureau; and Willard S. Small, Ph.D., United States Bureau of Education.

This committee reported on January 7, 1921, an outline of suggested health provisions for state laws relating to children. This outline emphasizes the importance of thoroughgoing consideration of health, in drafting child welfare legislation. It then proceeds, beginning with the prenatal period, to take up those problems occurring through the different age groups, which need legislative attention.

## Restrictions Removed

The report first warns those who are drafting legislation not to forget that the simple inclusion of a certain measure in legislation may not end the matter. It stresses the importance of the removal of all restrictive legislation, such as limitations as to tax rates and levies, and the need for positive authority and facilities for promoting and for undertaking the various measures suggested.

Examples of things which should be promoted by legislation for the protection of the child during the prenatal period, are facilities for the education of expectant mothers, for the establishment of prenatal health centers and clinics, for the protection of expectant mothers in industry, and for the health supervision of mothers.

For the protection of the child at the time of birth, regulations requiring the licensing of midwives, proper educational requirements and adequate health supervision for any training that may be given them, are recommended.

Control of ophthalmia neonatorum, sound measures for prompt reporting of births and supervision of maternity homes are among other subjects dealt with.

For the infant and pre-school child it is recommended that legislative restrictions be removed and definite legislative authority be granted, so that adequate facilities for the protection and promotion of health can be provided by state and local authorities. This is followed by provision for the control of milk and milk products.

Legislative provision is recommended for the training and instruction of all children of school age for the purpose of developing health habits through supervised physical activities, free play, and practical instruction in hygiene, nutrition and sanitation. The Committee empha-

sizes here the need of scope for the development of initiative, spontaneity, and responsibility on the part of the child. Attention is called to the need of providing funds and other means for the promotion of such work by state authorities.

Periodic physical examination and health supervision of school children are next taken up in the report, followed by references to health classes for special groups and recommendations for securing sanitation of school houses and their environment.

The need for physical supervision and health education of children of school age who may be in industry is emphasized.

The Committee calls especial attention to the importance of a bureau of child hygiene in each state, in which should be vested the administration of all legislative provisions affecting the health of children, except those which properly pertain to other state agencies. The necessity of coordinating the work of this bureau with others is emphasized.

Reference is then made to the need for seeing that public and private institutions, agencies, courts and boarding homes, caring for dependent, defective or delinquent children, shall be required by law to have adequate health supervision over their work and wards, subject to the regulations of the health authorities.

It is similarly urged that measures dealing with the appropriation and expenditure of funds for material relief in connection with child or maternity care should specifically make provision for adequate care of health.

The Committee does not attempt to draft specific legislation or even to indicate what the details of such legislation should be. However, it does cite nine reports and pamphlets on model laws and allied subjects which furnish the basis for drafting such legislation relating to the health of children.

Copies of this report are available at the office of the National Child Health Council, Washington, D. C., for those interested in child health and welfare legislation.

A model hospital for children is to be erected and financed by the American Red Cross at St. Mihiel in memory of the first great American effort of the war.

# The Anatomy of Feet and Their Full Efficiency

The Feet are Entitled to Careful Study and  
Plenty of Exercise to Keep Them Conditioned

By MARTHA M. BACON, M.D., ASSOCIATE PROFESSOR OF PHYSICAL EDUCATION, LECTURER ON HYGIENE, AND MEDICAL ADVISER TO WOMEN, UNIVERSITY OF KANSAS, LAWRENCE, KANSAS.

RACES as well as men are distinguished by the character, and usefulness of their feet. The Englishman has feet which are fleshy and short, but lacking in strength and character. The Scotch foot is high and thick, showing a great power with the ability to stand long marches and other tests of endurance. The French have esthetic feet—long, narrow, well proportioned—and they are considered very beautiful. The Russian has a peculiar foot, with the skin between the toes usually webbed to the first joint. The Mexican foot is short and strong with a noticeable distance between the second and great toe. The feet of the Chinese lady were about as beautiful as a horse's hoof, which they resembled after the process of beautifying was completed. They bound the feet of the girl when she was about seven years old. The great toe was left untouched, but the other toes were turned under the foot and bound, loosely at first, then the bandages were tightened until the growing nails would often pierce the quivering flesh. The American foot is well formed but inclined to be short for the height of the individual and, like that of the Chinese, has been the victim of barbarous treatment.

Practically all foot troubles other than those of congenital origin, are due to ill fitting and improper shoes and the vanity of the American woman, who has never stopped to study the anatomy, physiology, and hygiene of the foot, and does not real-

ize the importance which they bear to health, happiness and success in life.

The normal human foot is a graceful and beautiful thing, although it is next to impossible to find a normal foot when high heels and pointed shoes have been worn, and so we must turn to art and sculpture for our models.

The remarkable thing is, however, that with all the deformity and distortion inflicted by our shoes, the baby is born with normal feet and the dimpled bit of humanity, with the soft, pink and white toes, is a thing of beauty for the simple reason that it has never worn shoes and it might well remain so if mothers would study the anatomical structure and physiology of exercise in relation to the feet; giving this matter the care and attention which it deserves as one of the important parts of the body if not the most vital to the comfort, success, and happiness of the individual.

## Defects Nearly Universal

It seems strange that so little has been accomplished in caring for the feet, when we realize that about 90 per cent of the human race suffers from some defect or deformity of the feet which might have been prevented.

At last we have awakened to the fact that hundreds of ailments which have been attributed to the teeth, tonsils, eye-strain and various other causes are in reality caused by wearing shoes which produce corns, calluses, bunions, and which distort the

bones of the feet then press upon sensitive nerves and interfere with the proper circulation.

Many of the nervous troubles, such as headache, chronic pelvic disorders, and rheumatism, are directly due to the effects of ill-fitting shoes. The high heels throw the body out of alignment, causing a displacement of the stomach, bowels and pelvic organs which interfere with their normal healthy action and produce pain and disease.

A deformed child, with longing wistful eyes, watching his fellows at play, fills us with pity and we exclaim, "How terrible to be deformed!" Yet to every one who is made lame by accident or birth, there are thousands who are voluntary cripples or partially lame by wearing ill fitting or badly constructed shoes.

When we realize the value of good feet we will give them more care and learn something of their physical makeup. The child will be taught how to take care of his feet, just as he is now taught how to use the tooth brush and to manœuvre his nails. The time is ripe for a campaign for "better feet" and "foot hygiene." No one subject is more important, has more to do with public health or the welfare of the individual, and it seems strange that so little attention has been given to it.

The work of the army in the great World War has done much to improve conditions by causing shoes to be constructed on better lines and teaching men how to care for their feet.



Arrow points to seat of pain. Anterior arch beginning to fall.

Second degree. The great toe is pushed inward by narrow shoes.

First degree cavus. Note the bad callus on base of left foot.

This foot belongs to Type I. Shoes have rotated the foot.



Second degree flat foot. The foot has been crushed into too narrow shoes.

Type I. Normal foot of Claire Newton. The toes are very straight and flexible.

Third degree cavus or contracted arch, a frequent defect in the series reported.

Type III, long, narrow foot. Arrow on right shows the location of the pain.

Much has been written on the subject, but there is still a great deal to say, as the masses of the people know very little of the hygiene of the foot and are not putting into use the knowledge which they do possess.

The feet of the ancient Egyptian are said to have been beautiful because they encased them in sandals which allowed freedom of motion. When he entered the house his sandals were removed and his feet were bathed. The sandals gave adequate protection in the dry warm Egyptian climate, while permitting free action and giving light and air which are necessary to the health and development of the feet.

The early Roman shoes were called buskins. The sole was similar to that of the sandal, but the top laced up the leg and allowed freedom, instead of cramping the toes and forcing them on top of each other as our shoes do now.

The Germans early recognized the importance of good pedals and inspected the feet of their soldiers twice a week in the barracks and more frequently while on field maneuvers. The Germans also appreciated the fact that the horse had much to do with the comfort of the feet and provided their men with strips of cloth soaked in tallow, which they bound about the feet in such a manner as to avoid all wrinkles. In this way they prevented blisters.

### Value of Correct Dressing

America proved the value of correct dressing of the feet and has provided for her soldiers good shoes made on correct anatomic lines, free from wrinkles, and very smooth on the inside. The sole is moderately thick and has a broad, low heel. The shoe reaches a little above the ankle and is provided with eyelets instead of hooks for fastening, as more comfortable to wear and fitting the out-

lines of the foot better. It weighs only two pounds, while the German shoes weigh twice as much. The shoes of the American soldier are neat, comfortable and easy to put on and remove.

The human foot is an elastic arch composed of three divisions—the tarsus, metatarsus, and phalanges—comprising in all twenty-six bones, which are bound together by muscles and tendons, with an abundant supply of blood vessels and nerves. This forms the tripod upon which the weight of the body falls. The elasticity of the arch prevents the jarring of the frame during movements, and gives to the step the spring of youth. The foot consists of two arches—the longitudinal, which is long and sloping and extends from the heel to the ball of the foot; and the second or transverse arch, which is short and high, running crosswise of the foot from the outer edge of the sole where it touches the ground to the instep. The weight of the body is balanced on these arches.

### Defects of Two Classes

We are dependent on the muscles of the foot for locomotion and for that reason they are entitled to receive careful study with plenty of exercise to keep them in good condition. Nothing is better than walking and climbing to keep the feet in good physical health.

There are many causes of deformities of the feet but they fall under two general classes: congenital and acquired. The acquired deformities are due to some disarrangement of the bones of the feet and the treatment comes under methods of prevention. The measures for correction should begin in early childhood, when the bones are soft and the centers of ossification are just making their appearance. The foot then is mostly cartilage and the least amount of pres-

sure will cause a distortion, followed by permanent deformity, and, if the pressure is continued the result will be a contracted foot. The baby's shoes and stockings should both receive careful attention. Going barefoot not only develops the muscles of the foot, without making it larger than nature intends, but it gives flexibility to the toes and an elasticity to the step which can only come in a normal foot whose bones are in the right place and with arches that are built to support the weight without fatigue. When the muscles which hold the arches in position lose their tone the bones sink, resulting in the condition known as flat feet. The bones press upon sensitive nerves, making walking difficult, painful, and often impossible.

The normal foot is straight and broad at the ball, with a space between the toes, which are straight and flexible. The width of the arch is about one-tenth the distance from the base of the heel to the end of the second toe. The correct position in walking is with the feet pointed straight ahead. The inner border of the foot should not touch the floor. The heel, ball and toes support the weight on the ground.

The author has made more than five hundred examinations of the feet of girls at the University of Kansas and in the whole series has found but one girl having feet which could be called normal. The possessor of these unusual pedals is a young medical student who was born in China, the land of tortured feet. Her father and mother were American missionaries and Claire Newton spent her childhood going barefoot and playing in the sand with her toes trying to imitate the coolies in the exercise. Claire thought this was sport and did not know she was developing perfect feet, something rare and almost unknown. Her foot is broad at the ball and the



toes are very flexible, almost as much so as her fingers. While the foot is broad, it looks dainty and very attractive, and may have something to do with the lovely disposition and character of the possessor, who also has a mind that corresponds.

An examination of her sister's feet, revealed the same type of foot, but one arch was *cavus* and that of the other foot was slightly flat. While she, too, was born in China, her parents were in America when she was between the ages of six and twelve, and during this period probably she wore shoes which caused the abnormal condition.

#### Four Types of Feet

In the series of prints made at the University, the feet may be considered as belonging to four types: (1) The first is represented by Claire Newton's feet (Fig. 6), with toes flaring and the ball of the foot broad and straight across. (2) in the second type the toes follow a graceful curve. (3) The third type is a long narrow foot; while the fourth was (4) short and dumpy. The last two types were rather rare in our series.

In the examinations of 338 girls, there were found 106 cases of flat feet, varying from that of the first degree to a complete breaking down of the arch, or the third degree, flat foot. There were 82 cases of *cavus* or high arch, which included the contracted arches. We found 87 cases which we have classified as "mixed," this group exhibiting a combination of flat foot and *cavus*, varying in degree. Sometimes the right foot was flat and the left *cavus*, while in another individual the condition would be reversed; or one foot might have a normal arch, while the other was either *cavus* or flat, and varying in degree. There were 87 cases

which could only be classed as sub-normals, the arch itself would be nearly normal with toes distorted, or perhaps one foot rotated either inward or outward; and, again, it might be corns, calluses or bunions deforming the foot.

The feet of the negro girls were almost invariably flat. We have been repeatedly told that the North American Indian has beautiful feet and we would be prepared to believe this is true if we could find him in his native environment, wearing his moccasins. The recent examinations made of thirty-five Indian girls at the Haskell Institute is most convincing that the American shoe is ruining the American woman's foot, and the most prolific cause of flat foot, *cavus*, contracted foot, corns, calluses, bunions, and associated with about all the ills of human kind.

There were three Indian girls whose feet might be classed as normal, and one may be called perfect, this last being the feet (Fig. 10) of Beulah Clayazzie, age 20, five feet five inches tall, and weighing 149 pounds. She is a full blood Navajo and has worn moccasins all her life until she recently came to the Indian school which the Government supports. This print is different from any which has been made in that the second joints of the second and third toes show in the print. There was one case of the mixed variety of feet, the left one being a contracted foot and the right one *cavus* of the second degree. All the others had flat feet, varying from that of a beginning of the anterior arch to fall, to that of the third degree flat foot. Nearly all of the girls complained of pain and there seems no question as to the cause of the trouble.

Aside from the deformity of the arches, their feet were nearly all very

soft, the skin was of a beautiful texture, and they were comparatively free from corns, bunions and twisted toes—which seems to prove that the incorrect shoes destroy symmetry of the bony structure first.

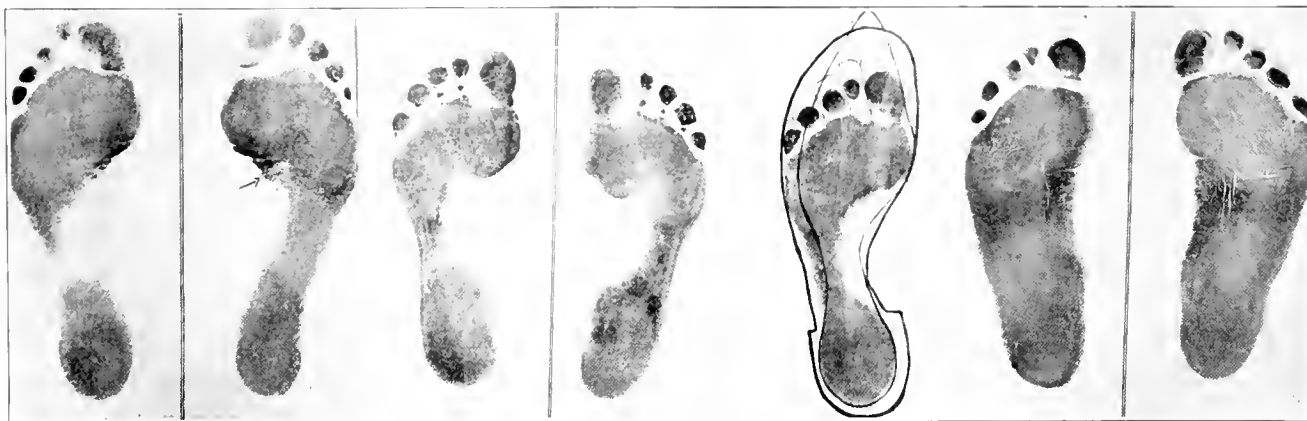
From a casual glance the plump little feet of the Indian maid appeared more beautiful than those of the college girl, but examination revealed the fact that the feet unaccustomed to confinement suffered greater damage when crushed into shoes with high heels and pointed toes than did the feet of those trained to wear the unhygienic footwear from early childhood.

#### London Conference on Child Welfare

An English speaking conference on infant welfare will be held in London, July 5, 6, and 7, under the patronage of the Minister of Health. The main subjects to be discussed are: residential provision for mothers and babies; environment as a factor in racial health; and the supply of milk, its physiologic and economic aspects. Every evening during the conference lectures will be given to infant welfare workers relating to the ideal maternity and child welfare center, the psychology of the mother and her child, common infections in mother and child, and other pertinent topics.

#### Health Work by Labor Gangs

Dr. T. F. Abercrombie, health officer of Georgia, has suggested that convicts and other gangs working on the roads be required to fill up pits, clean ditches, place culverts properly, and attend to other important details, which would deprive the mosquito and various other insects of many breeding places and incidentally reduce the malaria hazard of the state.



Mixed class. The left foot shows *cavus* and the right flat foot, first degree.

Normal feet of a full blood Navajo Indian girl. Toes are flexible and straight.

Normal foot with outlines of dress slipper and ground gripper shoe.

Third degree flat foot. The dark shadows on inner lines indicate a recent condition.

# Periodic Physical Examination—A National Need

## Fifty Per Cent of Our Working Population Are in Need of Important Medical or Physical Attention

BY EUGENE LYMAN FISK, M.D., MEDICAL DIRECTOR, LIFE EXTENSION INSTITUTE, NEW YORK CITY

IS THERE a national need for periodic physical overhauling of the bodies and lives of our citizens? Not so many years ago few people would have answered this question in the affirmative. Even now the extent to which such a procedure is a national need is appreciated by a comparatively small number of people.

The underlying common sense of the principle that it pays to inspect the human body periodically and apply scientific knowledge in correcting defects or training the body up to a better physical state, appeals strongly to the average intelligent person, but the same type of person usually fails to appreciate the full scope and possibilities of such a measure.

In the first place, the average citizen, grumble as he may about business conditions, political conditions and other phases of his environment, is nevertheless fairly well satisfied to leave conditions as they are. This state of mind reflects a certain physiological adjustment which is a sign of mental normalcy.

### Conditions Commonly Ignored

It is desirable not to sap the courage or confidence of the average citizen with regard to the outcome of the future, but to put this courage behind intelligent effort to better his condition. An easy going acceptance of things as they are, while a protection against panic, hysteria, and nervous instability, has its obvious dangers; it is not the course pursued by intelligent, resourceful business men in the conduct of their business affairs. The successful business man, who is not merely lucky, combines with perseverance, self-confidence, and the will to prevail, a very canny instinct for finding out what is going on in his business. He knows that no amount of optimism will fill a bank account and that you cannot draw a check against mere hope; there must be material resources upon which to make a draft.

Certain principles of logic and common sense which are applied to every other branch of human activity are almost ludicrously ignored in considering the human body and its adjustments to its environment. That

this complex aggregation of cells, offering splendid invitations to millions of enemies that work unseen, should be permitted to remain uninvestigated, year after year, until these enemies have, at least temporarily, overpowered resistance and given rise to pain or disability, is perhaps the most outstanding and incomprehensible piece of stupidity of which the human race has been guilty in a long range of tragic and costly errors. It is a paradox that man's intelligence is quite as frequently used by him for his injury as for his protection. Intellect, in the history of the human race, has proved to be a very dangerous instrument. Its survival value is often more than compensated by its destructive value.

Primitive man, even civilized man, is often superstitious and guilty of grossly injurious practices because he possesses intellect by which he can misdirect his actions, while the brute, through his instinct, could never be capable of such mistakes.

Primitive man, even civilized man, exhibits cruelty; organizes persecution. Through the intelligence which equips him to scale the heights, he likewise is capable of descending into the depths.

I have no desire to shake anyone's faith in the destiny of the human race as now constituted, but I would urge those who wish to approach this problem in a truly scientific spirit to dissociate themselves from present inhibitions and interfering obsessions and review the history of living organisms in the light of such knowledge as we have. The fact that other races of mankind have failed to attain adjustment and have passed out after far longer trials than any existing race has yet been subjected to warrants caution in assuming that man, as he exists today, is entitled to expect any better fate unless he exerts his intelligence to guard against degeneration and annihilation. Anyone who approaches this problem in other than a cold-blooded, scientific spirit, prepared to view the evidence without prejudice, unimpaired either by fear or optimism, will surely go wrong in his interpretation of such evidence; and not only

that,—he will miss a great deal in practical accomplishment because he will fail correctly to judge the opportunity for corrective work and thus neglect to utilize such opportunity to the fullest possible degree.

### Some Wholesome Questions

Let us ask ourselves a few point-blank questions as to the real national need for periodic health examination:

Is it not a fact that such physical examinations as have thus far been made of supposedly healthy people disclosed a very high percentage of physical defects?

Is it not a fact that men whose living habits are likewise considered in relation to their physical state have a similar high percentage of errors in personal hygiene?

Is it not a fact that the correction of these physical defects and the education of these individuals as to more rational hygiene will influence, not only their longevity, but their living capacity and achievement?

If these premises be admitted, is it conceivable that the nations of the world can continue to neglect these opportunities?

Is it not true that the nation which proves so apathetic and unintelligent as not to utilize such opportunities will fall behind others that do?

Can any nation that neglects ultimately to put into operation these rational measures for health protection and physical upbuilding expect to attain world supremacy or even maintain for any worth while or extended period such civilization as it has?

These questions were prominently in our minds during the crisis of the war. The war, for a time at least, profoundly altered our estimates of citizenship. When the call to service came, many men were appalled at the low appraisal that they were compelled to place upon their value as citizens. They were humiliated by their insufficiencies, either physical, mental, or material. Men who had proudly walked the streets, rating themselves pretty high as social units, even regarding themselves as still physically young, were stag-

gered to find that they were pretty nearly ready for the scrap heap!

If this may be said of middle-aged citizens who had cultivated a comfortable sense of self-sufficiency, it may as truly be said of many thousands of younger citizens who have suffered by civilization's stupid neglect to treat them with the same care and consideration that would be ac-

quired from nature and not subject to the operations of its laws as applied to other living organisms. On the other hand, there is too ready acquiescence in the theory of the law of mortality.

The postulate of the "seven ages of man" and the inevitableness of physical changes that we note with each decade after full maturity, is accepted without appreciating that it

of opportunity; there is no denying the penalty for profound neglect.

We have been accustomed to look upon Great Britain as an empire deriving its power pre-eminently from the physical excellence of its citizens. It must be obvious that brain and brawn were required to spread this empire over the earth and its ideals of physical training and physical prowess have always been high; yet the physical tryout of that nation at the time of the war elicited information that staggered the statesmen of the island empire. The spirit of Britain was still there, but, according to the statistics, the flesh was weak. How deeply this lesson was taken to heart by the best friends of Britain is shown by the following quotation of the report of the Committee of the Ministry of National Service, covering the examination of 2,425,184 of military age—from eighteen to forty-two—1917-18:

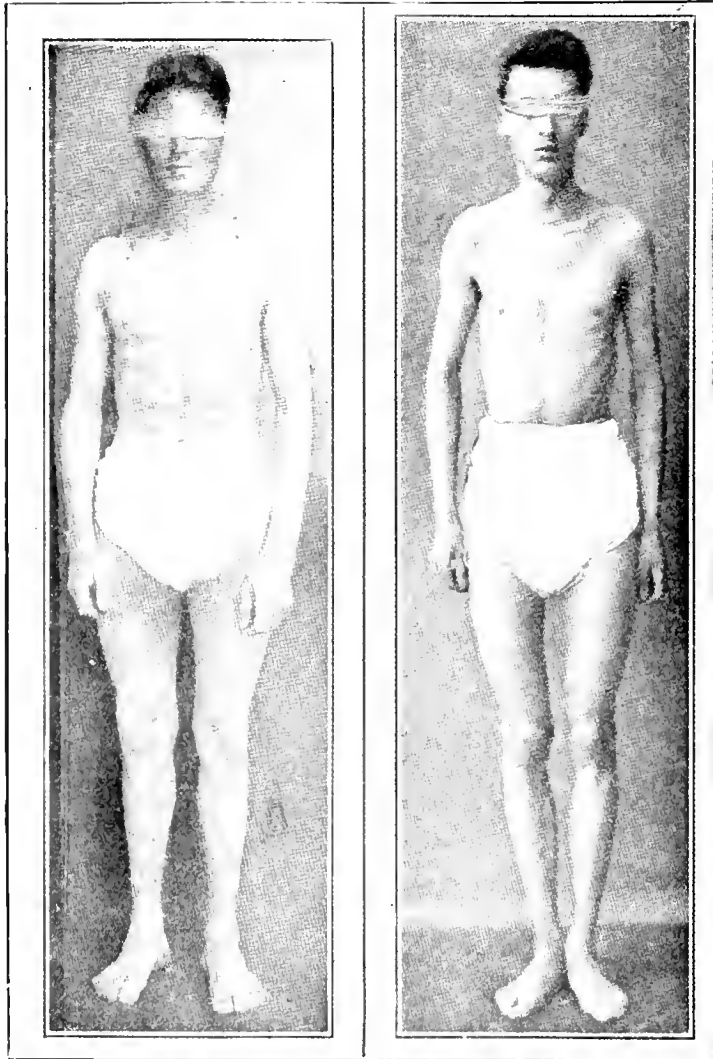
(1) Thirty-six per cent were placed in Grade I, i. e., approximately only one in every three had attained the full normal standard of health and strength and was judged capable of enduring physical exertion suitable to his age. The remaining 64-65 per cent, or two out of every three examined, over a million and a half in the aggregate, did not attain this standard.

(2) Between 22 and 23 per cent were placed in Grade II, i. e., approximately one in five did not reach the standard of Grade I and were judged to be capable only of undergoing such physical exertion as does not involve severe strain.

(3) Between 31 and 32 per cent were placed in Grade III, i. e., approximately one in every three presented marked physical disabilities or such evidence of past disease that they were not considered fit to undergo the degree of physical exertion required for the higher grades. They may be regarded for practical purposes as the "C3" men of the army nomenclature, whose physical condition became during the war a household word, which bids fair to become a standing addition to our phraseology, at least during the lifetime of the present generation.

(4) Rather more than 10 per cent were placed in Grade IV, i. e., approximately one in every nine or ten were judged to be totally and permanently unfit for any form of military service.

These four inferences may be summarized by saying that medical examinations showed that, of every nine men of military age in Great Britain, on the average three were perfectly fit and healthy; two were upon a definitely infirm plane of health and strength, whether from some disability or failure in development; three were incapable of undergoing more than a very moderate degree of physical exertion and could almost (in view of their age) be described with justice as physical wrecks; and



Grade I represents the full normal standard of health, equal to enduring physical exertion suitable to age.

Grade II represents the group capable of only such exertion as does not involve severe physical strain.

corded good-blooded horses or valuable live stock.

Why,—it may be asked,—is this thing so; why is it that we take good health and long life for granted until it is proved otherwise? I have already intimated that such a state of mind is, to a certain degree, physiological and normal; it represents a certain animal courage and confidence, but it also reflects a certain superstitious, medieval attitude of mind toward the human body; a notion that the human body is apart

implies uncaused action. Must the rise and fall of nations go on indefinitely without any nation showing the intelligence and initiative necessary to keep it on an ascending plane of physical and mental excellence? Is it possible by utilizing scientific knowledge so to mold the destinies of nations that they shall avoid the debacle that history shows has been the fate of all nations and of all races of mankind up to the new stone age? The future must answer this question. There is no denying the wealth

the remaining man as a chronic invalid with a precarious hold upon life.

The Committee then discusses the possible fallacies in the interpretation of such figures and, after allowing for all such possible fallacies, arrives at the following conclusions:

It seems probable, therefore, that the men examined during the year under review may be regarded in the aggregate as fairly representing the manhood of military age of the country in the early part of the twentieth century from the standpoint of health and physique, and that deductions founded upon the observations made at the medical examinations of these men may legitimately be looked upon as a trustworthy criterion of the national health of this period. . . .

War is a stern taskmaster with whom no compromise is possible, as we have learned to conviction during the past four years; convention, prejudice, self-satisfaction, apathy—all alike have to give way before the icy blast of war, which sweeps before it everything except hard facts. It has forced us to face our man-power problem with the close intensity which only a struggle for national existence can evoke. It has compelled us to take stock of the health and physique of our manhood; this stock-taking has brought us face to face with ugly facts and—*one hopes*—awakened us from the half-hearted complacency with which in the past we have treated our most important asset—the health of the nation.

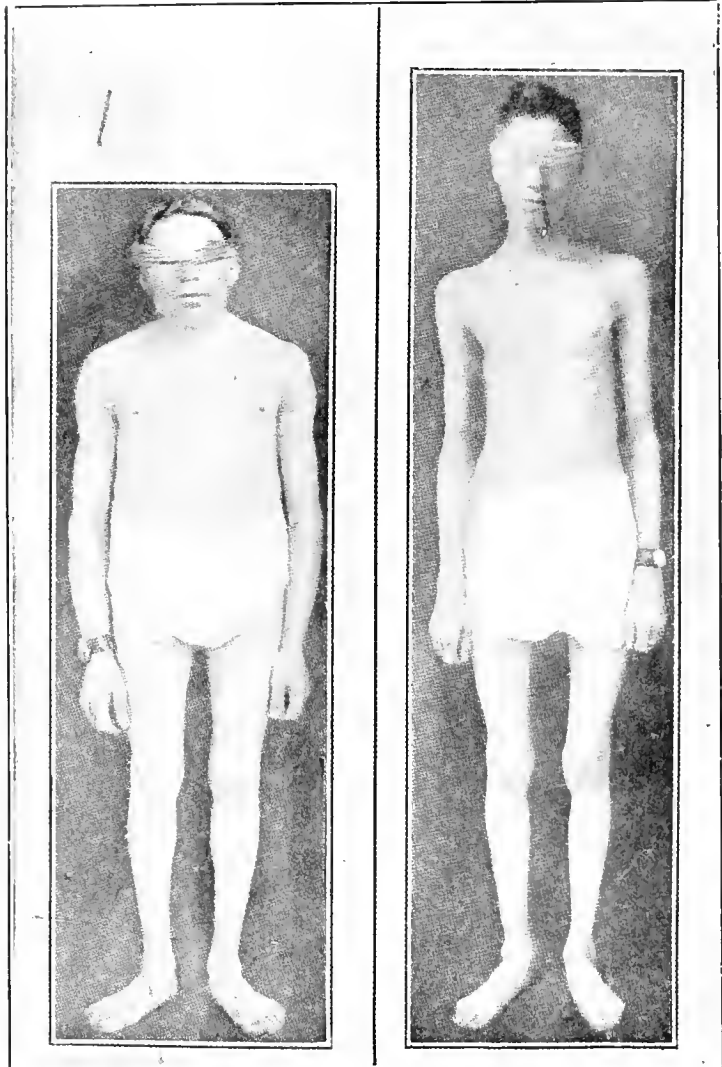
This is straight talk. It is better than millions of words of national self-glorification and blunt-eyed refusal to recognize not only the sources of national decay, but the factors that make for the decay of civilized mankind. It is true that we had propagandists and extremists who used our draft figures very recklessly and often inaccurately, but it is questionable whether they did more harm than many supposedly competent and restrained scientific observers who put the soft pedal on all these figures tending to show the physical ravages of civilization.

### The Factors Obscured

These questions were very much obscured from the standpoint of hygiene and the ultimate fate of the race by comparing peace standards with military standards. The standards of hygiene and of health should be much higher than military standards. It is well known that the vast majority of the men in our own draft who were accepted for full military service were not in good physical trim at the time of acceptance. They required a great deal of physical training and a considerable amount of repair work before they were fit for the firing line. The number declined for full military service approximated 34

per cent; but close to 50 per cent were recorded as having defects worthy of attention and there were, of course, sub-standard physical states and impairments which were not recorded at all among those who were accepted. The Life Extension Institute in its examination of supposedly healthy workers has found approximately 50 per cent in need of important medical

lished in pre-war days they were received with considerable surprise and skepticism, they were so far away from the life insurance figures. The fact that only 10 to 15 per cent of life insurance applicants are declined created the impression that such figures could be accepted as approximating the degree of important physical impairment in the population. Life in-



Grade III presents marked disability and represents the "C3" of the army, a classification which carries a stigma.

Grade IV includes the rather more than 10 per cent who were totally and permanently unfit for military service.

or physical attention and this ratio, we believe, may be accepted as valid for the active working population. It is well supported by such information as comes to us from military records of this and other countries and the records of physical examinations of employees, where these are carried through in a critical manner and not restricted for some special purpose, such as eligibility for employment, life insurance, etc. When the Institute's figures were first pub-

surance standards are business standards; they are sufficient to keep the life insurance mortality within the premium required; they mean this and nothing more.

It may be asked, what does constitute a proper standard of health and physical sufficiency? In fixing such a standard we must not present a mean physical state as determined from analyses of the existing population but rather a standard derived from a consideration of the physical state to

which the human body can be brought by reasonable attention to its care and training.

The Grade I man from the standard of hygiene, health, happiness and living capacity would present the following characteristics: Good posture; well developed, but not overdeveloped, muscular system; blood constituents and hemoglobin within normal range; heart, lungs, blood vessels, and kidneys free from impairment; arteries soft, blood pressure, under varying conditions, within the normal range; freedom from any organic impairment; freedom from head infection; teeth, nasal cavities normal and free from obstruction, impairment of the mucous membrane; tonsils normal in structure and function; head cavities, accessory sinuses, middle ear, etc., free from infection; vision normal or at least susceptible to correction to prevent eye strain; hearing normal; freedom from intestinal stasis, only one bowel movement a day usually indicating intestinal stasis; skin free from infections, eruptions, or other pathology; feet free from bunions, distortions, weakened arches, or impaired support,—able to carry a man as far as he wishes to go in a day's walk or climb without pain or untoward symptoms; freedom from nervous affections; brain and nervous system in sufficient poise to carry a man successfully through his business and social relationships; freedom from bacterial or parasitic infection of any kind; and freedom from toxic influences.

The Life Extension Institute has examined more than 150,000 people and it has never found a human being who could measure up to these requirements. Only about 10 per cent of the people examined may be said to have had minor defects; the other 90 per cent ranged from defects perhaps not menacing but of real importance down to those who are actually far advanced in disease and, in fact, in imminent danger, but often without consciousness of it. People gradually become adjusted to impaired health until their notion of what constitutes health is distorted. The only proper standard for the hygienist to set up is that of abounding health, a physical state of high resistance and one in which the period of physical freedom is not limited to a single decade or less but extended to many decades. There is no evidence either from biological sources, clinical sources, or vital statistics to indicate that modern man is through evolution attaining a higher physical type. Professor E. Grant

Conklin has maintained that there is some evidence to the contrary; in other words, that man's evolution has reached its limit so far as modern man is concerned and if any improvement is to be brought about it must be through man's directive intelligence.

### The Field Is Open

Through eugenics, through prenatal care, post-natal care, child hygiene, adult hygiene, community hygiene, we have the right to hope that a higher physical type may be attained, or at least that such latent possibilities as there are in the present type of man may be fully utilized. There is, of course, a limit to what nurture can do. There are definite limitations imposed by heredity. For this reason we must in this country consider the types that we admit to our shores and what may be possible in the way of preventing the multiplication of the grossly unfit. With these qualifications it may be said that the most important fundamental measure to be relied upon in prolonging human life and making it more livable is the thorough-going periodic survey of the lives and bodies of our citizens and the education of these citizens in the art of living healthily and happily.

### The Mortality Rates of College Women

Given proper economic, educational, and environmental conditions, the health and longevity of the people will be increased. It would be expected, then, that any group of persons who exemplify such favorable conditions in their mode of living would live longer than others who do not have these advantages. That this fact is so is shown by a recent study of the mortality rates of college women.\* Here is a class of persons who have unusual opportunities to learn how to adjust themselves properly to work, to rest, to amusement, and to living conditions generally. The results of the study, which was made by Miss Myra H. Hulst, statistician with the American Red Cross, show that the death rates of college women are lower than those of any other class of women which has previously been studied.

In order to reach this result, data were collected on all the graduates of three women's colleges—Vassar, Wellesley, and Smith. All alumnae of these colleges were included, start-

ing with the class of 1867 for Vassar and 1879 for both Smith and Wellesley. The number of graduates was 15,561 and the years of life totaled 204,553. It was found that the general death rate for the period of life included—20 to 64 years—was 3.24 per 1,000. This is a remarkably low rate. It is less than one-third the death rate of women of this age group in the United States registration area, which is estimated to be about 10 per 1,000. The figures for Smith alone—between the ages of 20 and 59 years—are even lower, being 2.55 per 1,000. Vassar has a rate of 4.16 per 1,000—between the ages of 20 and 69 years—and Wellesley a rate of 3.14—between the ages of 20 and 64 years.

The results when compared with rates for women in the registration area of the United States were lower in every age group. The figures for college women were also compared with those for teachers in New York City and the two were very much in accord. These teachers were found to have the lowest rates of any class of New York City employees in a study by George Buck on Teachers' Pensions in 1916.

The results of this study are significant in that they indicate what might be accomplished if the advantages which college women enjoy could also be extended to all other classes.

JAMES A. TOBEY.

### Appropriations for Social Hygiene

The Senate voted to strike out the \$40,000 for registration for the interdepartmental Social Hygiene Board, inserted as an amendment to the Sundry Civil Appropriation Bill. The appropriation for \$300,000 for the continuance of venereal disease control work was transferred from the Interdepartmental Social Hygiene Board to the Public Health Service. If this action is approved by the conference committees, the activities of the Interdepartmental Social Hygiene Board will cease after July, and all venereal disease control work of the government will be under the direction of the Public Health Service.

### Gains in Fresh Air Schools

Philadelphia Health Council and Tuberculosis Committee reports concerning the 297 undernourished children who are in open-air school classes. Both boys and girls have gained on an average of 1.7 pounds in weight during the period covered by last three months.

\*Mortality Rates of College Women. M. M. Hulst. Quarterly Publication, American Statistical Association, March, 1921.

# The Relation of Posture to Individual Health\*

## A Tendency to Get Away from the Non-thinking Acceptance of the "Customary" Working Postures

BY EDITH HILLES, BUREAU OF WOMEN IN INDUSTRY, NEW YORK STATE INDUSTRIAL COMMISSION

**F**ATIGUE—"the danger signal," blazes forth an advertisement: "Fatigue—the greatest cause of waste in industry today," says a government report. From all sides it is coming; the world is beginning to think in terms of fatigue and its elimination.

It is because of its relation to fatigue that the question of posture in industry has come to the fore. Until late years, posture has been studied for the most part as it affected school children. It was easily recognized that a child must not work too long in one position, that the desk and desk chair must be of proper height and modeled to give the necessary support. Non-adjustable double desks are relics of the dark ages in education, and constant improvements are being made in an effort to secure for the child the possibility of correct posture. Yet the worker is at his task many more hours than the child is in school, and the necessity for insuring to him the possibility of good posture is fully as important.

For years we were in the stage of shortsighted industrial development when "posture" meant only "give the girl a seat." Sentimental campaigns for "seats for salesgirls" were recognized as justifiable, but a round-topped stool was considered as good as a rocking chair, and the idea of any scientific study of the posture of a worker with a view to eliminating unnecessary fatigue was not considered, save by pioneers like Dr. Goldthwait, Mr. Spaeth, Mr. Gilbreth, the American Posture League, and a few industrial engineers.

### Efficiency Eliminates Waste

However, "necessity is the mother of invention," and where a manager has been forced to secure maximum production, he has inevitably come to see the need of some study of the posture of his workers in an effort to eliminate that fatigue which pulls

down his production, lowers his standards of work, and increases his accident rate. It is a part of efficiency to eliminate waste, whether it be waste in material, waste in motions, or waste through unnecessary fatigue.

Many work conditions—lighting, ventilation, clothes, noise or speed—may cause fatigue, and there is no doubt that bad posture is one of these causes, and that fatigue brought about in such a way is in large measure preventable.

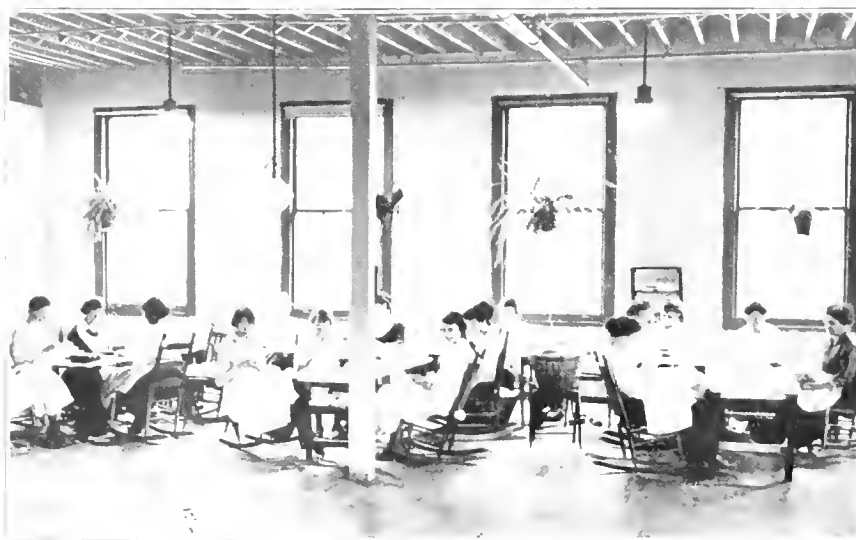
Fatigue, true to the advertisement, is indeed a "danger signal." It produces in the body poisons which gradually slow down the capacity for doing work. However, the body is so constructed that it purifies itself during rest, and the poisons that have clogged its bearings are carried off. The problem, then, is to so maintain a balance between work and rest that nature may have a chance to maintain her balance between breakdown and repair in the human body. Accident and production statistics would indicate that this balance is seldom kept in industry today.

A machine in some measure can protect itself. It stops running if it is not cared for; consequently, we give it the best care of which we are capable. Machines are expensive.

They are difficult to replace. They must be oiled at regular intervals and cared for scientifically. The human body is unable to protect itself in a similar way. Its slowing down is more gradual and it can be forced until repair is impossible and it is ready for the scrap heap. Until we come to realize that human beings are more expensive discards in industry than are machines, we will fall short of intelligent industrial development.

The fundamental need in industry is to prevent the worker from reaching a condition of over-fatigue. A little fatigue is easily overcome, if rest or change is supplied immediately. Twice the amount of fatigue requires *more than twice* the amount of rest, and so on, until finally a state of excessive fatigue requires a rest period that may need to be prolonged indefinitely. It is this fact which lies at the basis of the great unnecessary waste from accumulated fatigue.

"Our body is not constructed like a locomotive which consumes the same quantity of coal for every kilogram-meter of work. When the body is fatigued, even a small amount of work produces disastrous effects. . . . The workman that persists in his task when he is already fatigued not only produces less effective work, but receives greater injury to his organism."

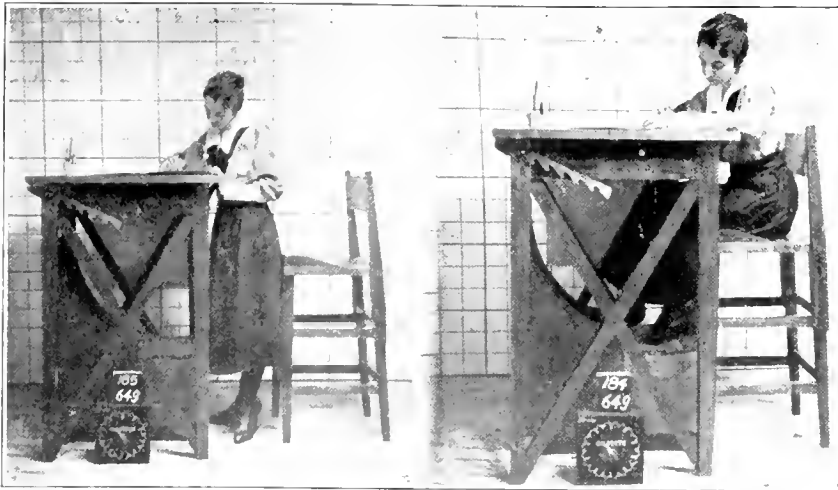


Adelaide T. Crapsey Company.

Certainly imagination was used in the equipment of this handfinishers' department of a clothing factory. The experiment in seating is an interesting change from the usual bent-double position of the hand worker in a garment factory.

\*The first of a series of articles on the relation of posture to industrial health compiled from the data contained in the report of the Bureau of Women in Industry of the New York Industrial Commission on Industrial Posture and Seating and the illustrations used are from those courteously furnished this Department for their Bureau.





The height of the elbow in relation to the table is the same, sitting or standing. Correct posture assures the minimum of effort and strain. Fatigue results from the cumulative effect of unnecessary tensions.

Scientific American—Frank B. Gilbreth. Note the backward slope of the seat and the circular foot rest under the bench. Designed for drafting work by Mr. E. E. Barney of the Remington Typewriter Company.

A bulletin<sup>2</sup> just prepared by the Bureau of Women in Industry of the New York State Industrial Commission has gathered together the most significant material on the study of posture in industry and the need for further study and establishment of scientific standards, as well as the experiments now being made in particular plants, or laboratories.

In defining good posture, statements from the American Posture League and from Dr. Joel E. Goldthwait of Boston are taken as authoritative:

Good standing posture is defined by The American Posture League as "one in which the different segments of the body—head, neck, chest and abdomen—are balanced vertically one upon the other so that the weight is borne mainly by the bony framework, and a minimum of effort and strain is placed upon the muscles and ligaments. In this posture, under normal conditions, the organic functions—respiration, circulation, digestion, etc.—are performed with the least mechanical obstruction and with the greatest efficiency."

Good sitting posture Dr. Goldthwait urges as "the thing which should always be insisted upon in the use of the body in any way is that the body should be kept straight from the hips to the neck and should not be allowed to flex or bend at the waist line. Any position which allows this lowers the vitality of the individual, leads to strain of the back, and naturally, lessens the efficiency of the worker."

In correct position leaning forward, the feet should rest comfortably on the floor or foot rest, the body should be kept straight from the

hips to the neck and the inclination forward should occur entirely from the hips.

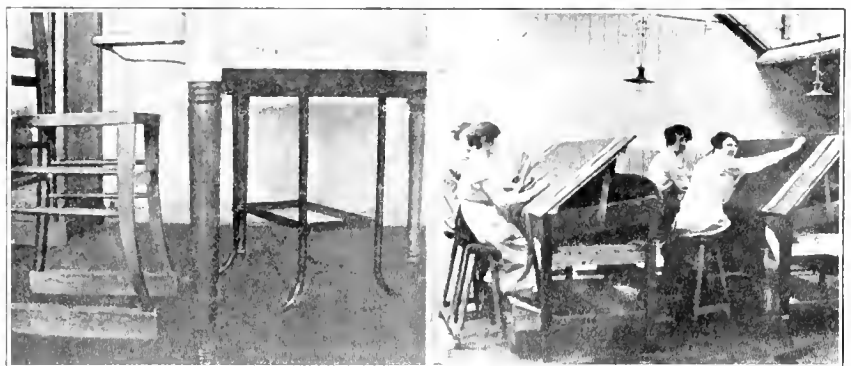
In correct position leaning backward, the feet should rest comfortably on the floor or foot rest, the pelvis should be as close to the back of the chair as possible, to prevent sliding forward, and the small of the back should be supported.

There is much variance in medical opinion as to the effects of bad posture on the health of the worker. Dr. Eliza M. Mosher<sup>3</sup> claims that the "habits of posture that produce round shoulders and forward drooped head not only lessen the space in the chest for the lungs, but may inflict great injury upon the organs within the abdominal cavity. While a variety of conditions are active in the production of a downward displacement of the organs, this bent forward posture of the body, especially in individuals of tall and slender build, is conducive to it. Normal folds and turns in the digestive tube are deepened by the

folding inward of the wall of the abdomen on the belt line and by the downward crowding that takes place. The canal is thus partially closed in places, with consequent damming back of its contents, thereby giving time for the colonies of bacteria, always in residence there, to multiply and the toxins they produce to be carried into the tissues of the general body in excess of elimination. As a result, constipation, diarrhea, flatulence, disturbances of circulation, headaches, nervous irritability, and, most marked of all, *fatigue out of proportion to effort expended*, lessen the efficiency of the individual and often make life a burden."

In the sideways slouch position the weight is more on one foot than on the other in standing, and more on one hip than the other in sitting. "The ribs are crowded together between a low shoulder and a high hip on the one side, and proportionately separated upon the other side between a high shoulder and a low hip. The wide separation of ribs on the high shoulder side limits their motion and thus interferes with the entrance of tidal air, especially at the apex of the lung on that side. The tubercle bacillus seems to find a good place for growth and multiplication in this region; certain it is that in a large number of persons suffering from tuberculosis this posture is the habitual one and the disease first invaded the apex of the lung on the side of the high shoulder. . . . In girls and women, with the marked slouch habit, the fundus of the uterus is almost invariably found lying beyond the median line of the body *toward the high hip side*, crowded over by the intestines which fall into the larger space on the low side."

The conclusions reached by the report of the New York State Industrial Commission may be briefly summed



A simple method of raising an ordinary chair to a height that enables the worker to sit or stand. Special devices are unnecessary if attention is given to the individual worker.

Scientific American—Frank B. Gilbreth. An adjustable table top is shown here. The seats and foot rests are very bad. (Report of Great Britain Home Office on "Seats for Workers.")

up as (1) that posture should be varied; and (2) that work conditions should be such that correct posture is possible, this result being assured by providing a physiologically good chair, and by arranging the different parts of the work place in the best possible relationship.

### What a Good Seat Is

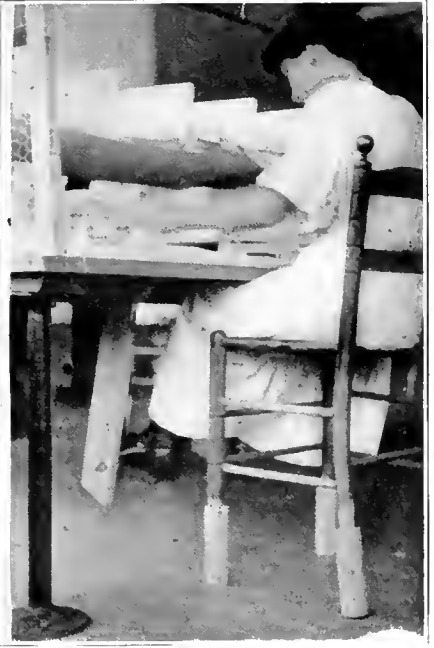
What a physiologically good seat is, and what relationship the different parts of the work place should bear to each other, will be discussed in articles following this one, together with examples of experiments in seating, which have been tried.

The importance of the first conclusion—variation in posture—cannot be too strongly emphasized. Continuous standing and continuous sitting are both injurious. Most of the known facts would seem to indicate that continuous standing is more harmful to women than to men.<sup>1</sup> It is nevertheless true that "varicose veins, knock-knees, and deformities such as flat foot, are frequently found among men pressers, apprentices of bakeries, motormen, and conductors, and it is more and more recognized that the determining factors are the demands of the particular industrial process, rather than the sex of the worker."<sup>2</sup>

"The effects of a constrained position combined with a sedentary life, are very injurious. This is especially seen in weavers, shoemakers, engravers, watchmakers, tailors, lithographers, etc., all of whom are obliged to assume a more or less constrained attitude, which interferes with the proper distribution of the blood supply, and is liable to be followed by internal congestion; but perhaps the greatest harm results from deficient movement of the chest and consequent interference with normal respiration. As a matter of fact, many of these artisans suffer from phthisis, constipation, dyspepsia, and hemor-



A small, collapsible table placed on a bench of ordinary sitting height. The legs of the table fold, and it can be pushed out of the way or used as in Figure 10.



Cluett Peabody Company.

Raised chair and swinging foot rest which is adjustable in height. The chair would be more comfortable without the knobs on the front of the seat.

rhoids, and all have a low average of life."<sup>3</sup>

The great difficulty is that most industrial processes have been handed down in such a way that one position is accepted as the only possible position, when, as a matter of fact, there are comparatively few operations which intrinsically demand continuous "one position" work. There has been next to no effort to scientifically "fit the work to the worker," except where it has been realized that unnecessary fatigue is needless loss, and that in order to reduce fatigue, work must be "physiologically balanced." A little ingenuity and imagination will many times make variation in posture a simple and practical possibility.

The testimony of firms who have displayed such ingenuity has been collected in the report referred to. One company manufacturing laundry machinery has now designed a machine with a platform and stool attached, and a pressing machine (Fig. 4) is now on the market which holds out as one of its best selling points the fact that it can be operated from either sitting or standing position. Another machine company claims to have especially designed the height of their machines so that the operator could either sit or stand at work. The experience of the packing department in a large chewing gum factory furnished an interesting suggestion. The packages of gum were being packed into glass jars which stood

almost a foot high from the work-bench. The packages of gum stood upright in the jar, and it was found that they could be packed more easily with the jar laid on its side, since the feeding motion in filling the jar was more easily done from the side than from the top. This lower position made it possible for the packers to sit down at work, and so the job became one which could be done either from a standing or a sitting position. Many instances of similar adjustment could be cited where the placid acceptance of the customary positions of doing things has prevented the introduction of simpler, more useful and more productive methods.

### Positions May Be Varied

When it is not possible to vary the worker's position while at work, whether because equipment or machines have been constructed with no thought of allowing variation, or because the operation is one at which only one position is possible, other means have been found by which the worker may be given the opportunity to change his position.

One such means is the establishment of an *interchange of processes* whereby the worker changes not only his position, but his work. In a small plant or with different types of hand work, this is easily arranged.

Many firms are at present regulating the handling of supplies in such a way as to force the worker to rise from an operation at which he has



The Lamson Company.

In an old-fashioned department store tube-room, the girls stood or walked from tube to tube. The modern appliances include chairs which enable the workers to sit or stand.

been sitting and take his finished articles to another department, where he secures fresh material for work. Thus, of necessity, he rises, walks about, and changes his position.

A production engineer tells of one instance in a clothing factory where the workers, on piece work, never paused during rush hours, or rose from their chairs. Supplies were brought to them, and on a long wall behind them, their wraps were hung. At noon, they reached for their lunches, usually carried in their coat pockets, and ate at their machines. In his reorganization of the plant he removed the wraps to a distant part of the floor, and regulated supplies in such a way that the girls were obliged to rise and walk about at intervals. Instead of considering this wasted time, it was definitely planned as a means of increasing production by giving the girls a chance to vary their positions and rest their tired muscles.

### Rest Periods Required

The introduction of rest periods is by far the most popular means employed to secure variation in posture. Where compulsory rest periods have been introduced, workers have not infrequently asked to have them eliminated and to leave that much earlier at the end of the day. Such a plan, of course, in no way brings the same

results; for the rest periods should be planned scientifically to make a break in the work at the time when a change is most needed. Nor is it enough to simply "permit" the rest. If the job has been a standing one, proper seating facilities should be provided for the workers during rest periods, or, if the job has been one requiring continual sitting, it should be made possible for the workers to walk about during the rest period. Some companies have gone so far as to introduce calisthenic drills outdoors, when the weather permits, during the rest period. The rest period should introduce variety and change.

Reynold A. Spaeth of Johns Hopkins University gives one instance of the introduction of rest periods in a pressing room where women had been standing at their boards all day. Rest periods of five minutes duration, one in the morning and one in the afternoon, were not only introduced, but comfortable chairs were provided to be used during these periods. The result was that an average gain in efficiency of 20.3 per cent was made by a group of four skirt pressers who were studied before and after the introduction of these rest periods. Without rest periods, the average efficiency of the four operators for nineteen days was 70.2 per cent; with rest periods, the average efficiency of the same group for nineteen days was

90.5 per cent. Undoubtedly this astounding increase in efficiency was due to psychological as well as physiological factors, but the fact is undisputed that a plan enabling workers to change their positions at intervals during work hours has a definite and often startling effect on output.

In the last analysis, industry is a problem in the conservation of man power. In seeking to intelligently meet the rapid development in industrial practices are we forever to accept the trial and error method, or are we to build on the accumulation of evidence which scientific study is gradually giving us? Custom is not perfect *per se*. To get away from the non-thinking acceptance of "customary" working postures, and to see to it that the worker varies his position, is becoming a simple and important principle in any plan for the elimination of unnecessary fatigue.

1. Goldmark, Josephine: *Fatigue and Efficiency*, New York, Russell Sage Foundation, 1912, p. 33.
2. New York State Industrial Commission, Bureau of Women in Industry: *Industrial Posture and Seating*, March, 1921.
3. Mosher, Dr. Eliza M.: *Relation of Posture to Health*, Reprint, The American Posture League, 1917, pp. 4-5.
4. Goldmark, Josephine: "Fatigue and Efficiency," Russell Sage Foundation, 1912, (cites testimony from physicians of all countries as to the harmful effect on women workers of long hours of standing).
5. Kober, S. M., and Hanson, W. C.: *Diseases of Occupational and Vocational Hygiene*, Philadelphia, Blakiston, 1918.
6. Kober, S. M.: *Industrial and Personal Hygiene*, Washington, 1908, p. 54.

## Highways and Health of Rural Communities

BY LEE LAMAR ROBINSON, FORMERLY PUBLICITY DIRECTOR, TRANSPORTATION DIVISION, COUNCIL OF NATIONAL DEFENSE, WASHINGTON, D. C.

THE so-called child welfare special, represented by traveling hospitals and laboratories, combined, made possible through the use of specially built bodies on motor trucks, which are gradually becoming familiar to the people of the rural sections and are meeting with widespread approval and success, naturally causes the question to arise, "Why are these traveling hospitals needed in this day and age, and in these United States?"

The answer is to be found in the fact that, due to the lack of improved highways of sufficient mileage, a tremendous number of the people of the United States are being denied prompt and efficient medical care as a result of the inability of physicians or nurses or both to reach patients in time always to be of service. Again, due to the same lack of good roads,

records show that physicians fewer and fewer in number are willing to establish themselves for practice in or near widely scattered areas, particularly where these areas do not furnish quick and convenient travel by highway.

Mr. Wilson, while President, in an address to Congress in which he favored an extension of the good roads movement, coupled this recommendation with a suggestion that steps be taken which would make possible fuller provision for sanitation in rural districts, and the building up of needed hospitals and medical facilities in these localities. The former President, therefore, it would seem, was fully cognizant of and in sympathy with, such development as would place within safe and reasonable distances from doctors, hospitals, and nurses, those people of this coun-

try living in isolated sections. President Harding, since assuming office, has on different occasions declared for an efficient road building program.

Poor highways, it has further been shown, make the death rate higher, preclude medical attention, and increase mortality. The Red Cross, the Y. M. C. A., the Y. W. C. A., and other similar agencies have been and are doing yeoman service to the end that rural folk be provided medical attention, particularly the present and prospective mothers and the little ones; and, through the use of traveling hospitals such as are suggested above, and of motor machines which today are not only mobile but hardy, such associations are sending into sections which know practically nothing or at best all too little of scientific medical treatment and nursing, cars for the purpose of giving instructions

not only to individuals but, through lectures, pictures, etc., in sanitation and the care of the health, to the communities.

Surveys made by different departments of the government show two causes for the lack of proper medical treatment of people in the extreme rural districts, particularly in the great Northwest, the first and most important of these being the practical inaccessibility of tens of thousands of farm homes from those skilled in medicine and surgery. Again, in answering the question, "Does the country need doctors?" Federal statistics also show that 3.7 per cent of country children are affected by tuberculosis of the lungs as against about 1 per cent of city children; that the eye defects in country children are four times as numerous as in

est of the general public in rural health conditions and plans for improving them, is made apparent. It is an interesting fact that about two-thirds of the 160,000 or more doctors in the United States now own and operate motor machines, thus putting them in a position to very greatly extend the area in which they may practice, provided the Federal Government and the states, as well as the counties and the communities, see to it that these doctors are provided such roads as will enable them to serve efficiently the greatest number of patients.

It has been very well said that "Good roads pay dividends in health as well as in prosperity." Along these lines, information gathered by the Transportation Section of the Council of National Defense is of interest and value as tending to focus attention



(Photo by J. F. Smith.)

This pictures a road which is the main highway between twenty thousand people and the railroad. The farmer's mule has fallen exhausted when he is still twenty miles from the market.

the health not only of certain individuals but groups in cities and also in rural districts. This would seem to offer an interesting subject for detailed inquiry and discussion."

A report from North Carolina says that public health education is being directed to the various counties in the state at this time, "the good roads counties getting it first."

Reports from West Virginia suggest a serious situation in that people in different localities, which are distant from centers of population, have presented petitions to the state health officer asking that men with but few if any qualifications as physicians be permitted to practice without molestation, due to the fact that it is impossible to get physicians to locate in these sections. One such report concluded: "Better roads and quicker transportation would doubtless bring about better conditions."

From Illinois comes this information: "Rapid means of transportation over good roads is doubtless of advantage in bringing about a better milk supply through quicker delivery and of advantage in making communities more accessible to county or municipal nurses and to physicians. Transportation of patients to hospitals by means of ambulances or otherwise is practically out of the question at certain periods of the year in certain sections."

### Congress and Highways

Two subjects which will be well to the forefront in the special session of Congress, now in session, will be that of the public health and of highway development. While the two will not be related from a legislative standpoint yet those members of Congress who are interested in securing further federal appropriations to aid the states in road building will use, as they have in the past, among other arguments the vital relation of highway extension to the health of the



(Photo by J. F. Smith.)

What chance for emergent or regular medical and nursing care have the people who live on a road that requires a four-mule team to pull the mail wagon? Two counties in Kentucky are so isolated on the road served by this mail wagon.

those of the city; that ear defects are more than five times as many; enlarged tonsils, four times, and curvature of the spine, twenty times as numerous.

### Physicians Automobile Owners

As every death is an economic as well as a personal loss, from a selfish standpoint if from no other, the inter-

upon situations now existing in various States from a health standpoint, and some of the most vital factors in relation thereto.

For example from Kentucky comes a suggestion that "The number of physicians in the rural districts is rapidly decreasing . . . and especially does this apply to sections not having good roads. It is impossible to organize rural community hospitals where there are no good roads."

From Louisiana: "If appeals from rural districts for physicians can be used as evidence the hardships of bad roads certainly must prevent physicians from practicing in rural communities because there seems to be a large number in need of this help."

### Need of Inquiry Suggested

New York: "The importance of transportation facilities including highways, are doubtless of importance both directly and indirectly to



(Photo by J. F. Smith.)

This mountain stream is followed by a trail which is the only highway leading through a remote mountain district in Kentucky.

nation. Investigations, begun during the last administration, into health conditions will be continued by experts under the new administration.

As these investigations proceed those in charge will inevitably run into the problems involved in the providing of ample and substantial thoroughfares, whether urban or rural. Social workers, also active in Washington, have long since learned that the colonization of great numbers of people in congested areas is in direct conflict with movements looking to the promotion of the health of the country. Therefore, they have become converts to the movements looking to the location of city workers in the suburbs. This plan spells wider areas in which the children may play, breathing spells for the man who toils in factory or store during the day, and the possibilities of garden spots which cultivated, mean both health and recreation.

The advent of many modest priced

motor cars has made it possible ere this for city workers to live in the open, but one handicap has been found in the failure of county and municipal authorities to provide roads which make trips to and from town agreeable and of short duration. The result has been that far-sighted realty men as well as those interested from an unselfish standpoint, in placing families outside the city proper as dwellers, have come to realize roads must be provided to give the open spaces that are necessary to attract the people.

#### Back to the Farm Movement

Again, a well backed movement is on foot to interest immigrants in country life that the production of foodstuffs may be increased and also the congestion in the cities decreased. The wonderful highways of the European countries are known to many in this country and these realize that no stronger appeal can be made to the

immigrant in seeking to interest him in a life on the farm than to provide such highways as will give the companion loving European, opportunities for getting into frequent touch with his fellows.

As a result, the highway movement is linked up not alone with the interests of the man in an isolated section of the country from a standpoint of health and recreation but also with the present and the potential dweller in the environs of our cities. Again, to the man whose interests require an urban residence the highways leading out to the open country have an appeal today, due to the motor era, which they never had before. They make accessible drives which bring both mental and physical relaxation and put in close touch the golf course and the picnic ground, two recognized adjuncts to better living conditions, and better living conditions mean invariably a healthier and stronger nation of individuals.

## Public Health Nursing in New York

### Growth and Present Organization of the Nursing Division of the State Department of Health

BY MATHILDE S. KUHLMAN, R.N., DIRECTOR, DIVISION OF PUBLIC HEALTH NURSING, ALBANY, N. Y.

WITH the reorganization of the State Department of Health in 1913 a Division of Public Health Nursing was created by the legislature with salaries for but four state nurses. In the following year provision was made for a director of the Division and three additional nurses. The subsequent legislature made no provision for the salary of a director or for additional nurses.

Owing to the great epidemic of poliomyelitis in 1916 it was necessary to provide special state nurses for clinic and follow-up work among those crippled by the disease. This corps consisted of eight nurses and two muscle testers. The legislature of 1919 increased the number of state nurses and provided for the salary of a director. The Division of Public Health Nursing at the present time consists of a director and twenty-six supervising nurses, and two muscle testers.

This growth in the personnel of the Division has been largely due to the recognition by the people of the state of the importance of the work of public health nurses as is clearly evidenced by the fact that the number of

local nurses outside of the city of New York has increased from some 135 in 1913 to more than 1,050 at the present time.

The supervision by the state of the work of local nurses, while not specifically defined by law, is clearly indicated by the relation which the



Following a demonstration visit, the public health nurse makes an instructive visit (N. O. P. H. N.).

local nurse bears to the local health officer over whom the State Department of Health has been given supervision.

Owing to the ever increasing and diversified demands made upon the nursing division of the State Depart-

ment of Health, it has been found of advantage to assign a part of the state staff to special and others to the supervision of general work. Thus one nurse is assigned to each of the following divisions of the State Department of Health: Child Hygiene, Tuberculosis, Communicable Disease, Venereal Diseases, and Public Health Education. One nurse gives full time to the supervision and instruction of the 520 midwives of the state and to the inspection of fifty-two day nurseries outside of the city of New York. Another works in cooperation with Farm Bureaus and Granges, Parent Teachers' Associations, Civic Clubs, and the like, giving lectures and teaching classes on the subject of home nursing, first aid and kindred subjects. One supervising nurse assists the Acting Director of Public Health Education in editing a *Public Health Nurses' Bulletin*, which is issued monthly by the State Department of Health for distribution to nurses throughout the state. This *Bulletin* contains articles of instruction and information on such subjects as mental hygiene, nutrition of school children, record forms, etc.



The nurse assigned to the Division of Communicable Diseases assists the Sanitary Supervisor and local health and educational authorities when called upon by them in controlling outbreaks of communicable diseases in the various districts throughout the state. In the conduct of this work instruction is given by the nurse to school teachers and lay persons in the prevention and control of communicable diseases and, when necessary, she assists the Sanitary Supervisor or local health officer, or both, in making sanitary surveys in order to locate foci of prevailing diseases, such as tuberculosis, influenza and typhoid fever. The organization of the Division of Public Health Nursing is sufficiently elastic in the event of severe outbreaks of epidemic diseases throughout the state so that in an emergency the entire nursing staff or any part of it may be placed at the disposal of the Director of the Division of Communicable Diseases.

On the five largest of the Indian Reservations of the state there are four public health nurses who cooperate with the reservation physicians in the care and teaching of the Indians. In addition to bedside care they give instruction in prenatal, general public health nursing, and part of their time is devoted to school work.

In the after-care of infantile paralysis the state has been divided into eight districts and one nurse assigned to each. Periodical clinics are conducted by the orthopedic surgeon of the State Department of Health, assisted by these nurses, who arrange for clinics and make follow-up visits to the patients, giving instruction in proper muscular exercises and in the adjustment of braces and orthopedic appliances.

It has recently become possible for the Division of Nursing to place in effect a plan whereby one supervising nurse is assigned to each of the fourteen State Sanitary Supervisors' districts, her duties being to assist the Sanitary Supervisor and local health officers in the development of public health nursing where such is not or-



Eight Nurses and two muscle testers constitute the corps whose function it is to look after the child cripples of New York State (N. O. P. H. N.).

ganized and to give assistance to those nurses who are already in the field in the performance of their work including instruction in the method of filing reports.

The number of local nurses has increased so rapidly as to make it inevitable that many of those now in the field have had little or no training in public health except what they have been able to gather by experience and reading. It is therefore very essential that insofar as possible the state nurses shall be kept constantly in touch with the work of the local nurses, helping them to solve the difficulties in the performance of such of their duties for which their training has not especially fitted them. It is hoped that in the near future short courses of instruction in public health for nurses already in the field will be provided. This is of such fundamental importance to local communities and to the health work of the state at large that it is to be hoped that the plan will not be long delayed.

Finally, the Division of Public Health Nursing is cooperating with the Bureau of Nursing of the Atlantic Division of the American Red Cross and with the Nursing Division of the State Charities Aid Association in endeavoring to standardize the nursing work of the state and to secure qualified public health nurses to supply the demand. Through conferences with these organizations the activities of the nurses in the field is coordinated and planned to prevent the duplication of effort. The agreement with the American Red Cross is as follows:

(1) That local American Red Cross

nurses forward a copy of their monthly statistical report to the Director, Division of Public Health Nursing, State Department of Health.

(2) That American Red Cross nurses attend such conferences of nurses as State Department of Health district supervising nurses might call together within the district, if the conferences are not too frequent, and the nurses' work permits them to get away.

(3) That State Department of Health district supervisors will receive every consideration from American Red Cross nurses if they wish to make visits of inquiry or inspection.

(4) That American Red Cross nurses may take advantage of the opportunity to consult with State Department of Health district supervisors about their work, other than matters of Red Cross organization.

(5) That American Red Cross nurses render occasional service in adjacent territory, at the request of the district supervising nurse, State Department of Health, if their work permits, and if such requests are not too frequent.

(6) That occasional conferences will be held with the Director of Nursing Service, Atlantic Division American Red Cross, and her supervisory staff with the Director, Division of Public Health Nursing, State Department of Health, and her supervisory staff.

(7) That the Director of Nursing Service, Atlantic Division American Red Cross, and the Director, Division of Public Health Nursing, State Department of Health, confer more or less regularly in order to be better informed of each other's work and thereby to avoid confusion and make the best use of both services.

In addition to the local communities now supplied with nurses there are several hundred more who would be willing to pay for the services of a nurse if the latter could be secured. The State Department of Health feel that there is no more important factor in stimulating the interest of the people in public health than the presence of a well-qualified public health nurse, and to this end the Division of Public Health Nursing of the State is bending a large part of its energy.



The public health nurse teaching the modification of milk (N. O. P. H. N.).



The public health nurse is encouraging a fresh air treatment (N. O. P. H. N.).



# Principal Disease Conditions

THE February *Statistical Bulletin* of the Metropolitan Life Insurance Company reports as paid during 1920 nearly forty-seven million dollars in the payment of death claims, more than three-fourths of which amount was paid on account of deaths from ten causes which are largely preventable or postponable.

More money was disbursed on account of tuberculosis than for any other disease. Despite the fact that the death rate for tuberculous diseases in 1920 was the lowest in the history of the company, and was two-fifths below that of 1911, more than six and one-half millions were paid for death claims resulting from tuberculosis. There is still much room for extension of the educational campaign which has been carried on for years to show the importance of personal hygiene, of early recognition of incipient cases, and of the fresh air method of treatment.

Pneumonia ranks second in importance in amount paid for death claims. The sum was more than five million dollars. Many of these pneumonia deaths were due, primarily, to influenza, which continued to be, on its own account, one of the principal causes of death; it was responsible for the disbursement of well over three million dollars. One dollar of every fifteen disbursed was paid on account of deaths definitely reported as due to influenza. The total for influenza and pneumonia combined is even higher than for tuberculosis. The amount was more than eight and one-fourth million dollars.

Over five million dollars were paid on account of organic heart disease.

There is a promising field for public health work in the dissemination of information to cardiac patients on personal hygiene by means of which many of these deaths could readily be postponed.

Over three and one-half millions were paid in the settlement of death claims for cancer. One death in every eight of women and one in every fourteen of men over the age of forty years is from cancer. There is much to justify a more intensive effort on the part of communities to disseminate knowledge concerning the early symptoms and treatment of the disease.

The amount disbursed on account of the various diseases and conditions arising from pregnancy and childbirth was nearly one million dollars. It is evident that still greater efforts are called for in such directions as the education of pregnant women in hygiene, the supervision of midwifery, and even more than these, the extension of prenatal and postpartum nursing care.

Bright's disease and cerebral hemorrhage were other important factors, for which, together, about six million dollars were disbursed. Deaths from these diseases are, in the majority of cases, those of older persons; nevertheless many of them are postponable, especially those from Bright's disease.

## Life Has Economic Value

There were disbursements of nearly four and one-half millions of dollars on account of deaths from violence. This is in spite of the fact that the death rates for suicides, homicides,

and accidents were lower than have obtained for many years. These rates are still needlessly high in the United States.

These figures bring home strikingly the economic value of human life. They show how great are the losses from conditions which are, to a great extent, preventable. But the losses suffered by communities are far greater than those of the insurance companies. The average amount of insurance carried is far below the economic value of a human life. Life insurance companies have found that it is profitable to engage in health conservation work because such effort prevents or postpones deaths from many diseases. Certainly then, the organized public health agencies of the Federal, state and municipal governments, which have more at stake than have insurance organizations, will be justified in spending more money on properly directed effort in public health work.

The accompanying table shows the amount of money disbursed in death claims on account of each of the more important causes of death.

## Death Rates Among Medical Men

The *Journal of the American Medical Association* recently analyzed the deaths of medical men in the United States during the preceding year. General diseases accounted for 267 deaths, diseases of the nervous system 271, circulatory 404, respiratory 266, digestive 70, genito-urinary 154, senility 77, suicide 32, accidents 102, homicide 14, sequels of surgical operations 74. Organic heart disease and cerebral hemorrhage were among the most frequent assigned causes for death. An analysis of this kind properly correlated with the factors would be significant in maintaining the health of physicians as a class.

## Industrial Disease Compensation

The *Monthly Labor Review* for January, 1921, reports that the Labor Gazette of Ottawa for November publishes a list of industrial diseases approved by the government under the Workmen's Compensation Law of New Brunswick (1918), which authorized compensation for industrial disease. The list includes poisoning from sulphur, anemia, and carbonic gas, as well as infections from handling sugar, among the more unusual poisons. Compensation in industrial disease presupposes an industrial toxicology.

AMOUNTS DISBURSED ON ACCOUNT OF DEATHS FROM SPECIFIED DISEASES AND CONDITIONS. Metropolitan Life Insurance Company, 1920. Premium Paying Business—All Departments.

Disease or Condition	Amount	Percent of Total
ALL CAUSES OF DEATH	\$45,834,973*	100.0
Typhoid fever	425,854	.9
Influenza and pneumonia	8,255,040	18.0
Influenza	3,088,167	6.7
Pneumonia— all forms	5,166,873	11.3
Tuberculosis all forms	6,555,927	14.3
Tuberculosis of the lungs	6,111,033	13.3
Cancer— all forms	3,645,297	8.0
Cerebral hemorrhage; apoplexy	2,675,470	5.8
Organic diseases of the heart	5,035,346	11.0
Bright's disease	3,218,314	7.0
Puerperal state	959,498	2.1
Total external causes	4,381,648	9.6
Suicides	537,777	1.2
Homicides	431,691	.9
Accidents	3,416,311	7.2
Accidental drowning	378,034	.8
Traumatism by falling	400,707	.9
Railroad accidents	397,911	.9
Automobile accidents	580,384	1.3
Other accidents	1,559,275	3.4
All other causes of death	10,682,579	23.3

\*Total disbursed in death claims, \$46,940,197. Above tabulation does not include death claims paid on "paid-up" automatic term extension business.

## THE NATION'S HEALTH

(Continuing MODERN MEDICINE.)

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## The Nation's Health Initiates a Broadened Health Program

THE transition of this magazine to a journal of broad scope in public health is completed and this issue marks its appearance under the new name, THE NATION'S HEALTH, which announces the policy to be pursued.

The scope of the new magazine is inclusive of all the measures which prevent disease and promote and condition health. Special emphasis will be placed upon organized agencies, public and private, which care for the health of groups of people and are therefore in a position to promote health by comprehensive measures. Industrial and commercial groups, students in schools, academies, universities, dormitory groups, and inmates of institutions may be protected and benefited in their health through organization much more effectively than by individual effort. Those who have control of a large part of the time of groups have an opportunity for public service which has been all too little realized. If every industrial manager, school director, head of a boarding institution, or the superintendent of a benevolent institution were to organize for the health of the groups under their care, a mighty transformation would take place in the health of the nation. Such a change is to be looked for in the organization of all social and industrial groups into better health units. To the field primarily of organized effort for health this magazine will be devoted.

## Internationalism of Disease Calls for Collective Effort

THE obvious fact that disease is international has remained dormant in the minds of the leaders of the nations. Each country has acted by and for itself in fighting disease. Each country has built with more or less success a wall of inspections and regulations to prevent the importation of disease. Yet disease spreads from nation to nation—now typhus, now bubonic plague, and again cholera or yellow fever menaces the world from infected quarters.

In an illuminating article in the *North American Review* for March, Dr. Richard P. Strong of the League of Red Cross Societies points out that "even in times when communication by land and sea was extremely limited, epidemics often spread from country to country as is evidenced by the pestilences of plague, cholera, typhus, and small-pox which ravaged Europe in the Middle Ages, but with the bridging of space by modern means of transportation the danger of the spread of a number of the most serious infectious diseases evidently has been greatly increased."

America, though isolated geographically, has had typhus and plague imported within the year in spite of stringent regulations and vigilant inspections. Warnings come out of Central Europe that "unless typhus is checked at the source in that region it will spread throughout the world."

"The war against disease is a world war," declares Dr. George E. Vincent in this issue of THE NATION'S HEALTH. "Commerce carries dangerous infections as well as goods and ideas. The health problems of the remotest land concern all peoples. More and more nations are coming to recognize their interdependence in health, as in industry, government, science and culture."

The plain facts of disease infections are operative internationally and call for united action by the nations. Fortunately, we are already equipping for action. The League of Red Cross Societies, the International Health Office, the Rockefeller Foundation, and others are laying the groundwork for coordinated world action.

## Exact Measurements of the Cost of Disease

THE failure of many health appeals to the legislatures and to the public has been due to the lack of exact information of economic loss. We have estimates of the cost of disease to the state, but the cold facts are not always at hand.

The Metropolitan Life Insurance Company of-

fers the facts in their report of actual cash paid out during last year for deaths from various causes. The study of the report is recommended to all. Three-fourths of the forty-two million dollars paid out by the company on account of deaths go to pay for the havoc of ten diseases. The order of the most important of these is: tuberculosis, pneumonia, heart disease, accidents, cancer, Bright's disease, and cerebral hemorrhage.

If the public could feel the actual cost by paying it out of their pockets, we would doubtless make more intensive campaigns for the prevention of these diseases which are causing the loss.

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### The Practice of Individual Preventive Medicine

**P**REVENTIVE medicine usually connotes the eradication of a disease by improved methods of detection, preventing contagion, or segregation. Typhoid fever in 1900 was a common disease on the wards of any big general hospital; in 1921, thanks entirely to the work of those interested in preventive medicine, typhoid fever is a rare disease. So yellow fever and malaria have been studied and removed from the common plagues; now typhus fever is being investigated, the method of its transmission is understood, and very probably in the near future typhus fever will be a rare disease even in the spots where it now rages.

But all this ground work, when viewed from the angle of the average individual practitioner, partakes of the nature of a grand celebration in which he has no part. He reads his medical journals and knows what is going on: if he sees a point of individual prophylaxis which is a part of the major program, he readily does his share; but the average practitioner of medicine is not an active contributor to the program of preventive medicine. We believe that he can be a much more active contributor to the program, if the selections were made more "popular" and less symphonic.

We suggest for the program makers philosophical and imaginative inspiration as well as scientific. The laws of cause and effect in disease must be turned backward and applied to the individual. The lessons learned from studying late effects of disease should be analyzed and then applied to the prevention of the disease in the individual. Of course, this is common enough practice and already has shown results. But we believe that too strenuous a logic has often been used, with the result that the individual has been neglected for the disease—a point Mackenzie has emphasized frequently. The importance of scientific

imagination has been overlooked in the application of hard and fast rules of scientific inquiry.

Perhaps we can make our point clear by a few examples: Taking, for instance, that large group of patients who are seen especially in office practice and who have the symptoms grouped, for want of a better name, under the term "essential hypertension." With these patients it not infrequently happens that a most careful study of possible focal infection is without results. Certainly in some focal infections symptoms are cleared up and the patient becomes better; but in a large percentage of these patients, even if infections are found, their removal does not by any means have the desired effect on the symptoms.

Since it is hardly possible for any illness to exist without a cause, it must be evident that some cause other than a focal infection may have been the active contributing element. To find this cause needs the exercise of scientific imagination as well as pure science. The patient will admit that some time during his life he was sick. Perhaps he was subject to colds or sore throats, or an over-indulgence in tobacco or alcohol may be discovered. The thought must occur that repeated attacks of a slight ailment may in the long run produce an evident disease, even though at the time of the attack no harmful result manifests itself.

The idea that this kind of reasoning, aided by the imagination, may be scientifically correct receives considerable support from a study of the influenza epidemic of recent years. The most outstanding clinical feature of the 1918-1919 wave was the observation that the heart apparently remained unaffected except in the fatal cases. It was so striking a feature of the disease that if myocardial insufficiency was found or even if the pulse became faster, the physician felt that that phase belonged to a complication or sequelum of the real disease. Yet, notwithstanding the apparent immunity of the heart, about eleven or twelve months after the epidemic, case after case of myocardial insufficiency developed in patients who had suffered from influenza. Post-influenzal myocarditis became a common affliction in the fall of 1919. It is obvious that the disease influenza had affected the myocardium in a large number of persons, even though these myocardial changes were not recognizable at the time they occurred.

This being true of influenza, we are justified in applying the same reasoning to acute follicular tonsillitis. We know the terrible triad of tonsillitis, arthritis, and endocarditis, so that we are aware of the potential dangers of a tonsillar infection in a certain number of patients. It must be true that attacks of acute follicular tonsillitis

may damage a heart muscle to an insufficient degree to be demonstrable by present day methods, but that the result of an accumulation of such slight damages may eventually be a real cardiac lesion. It is almost axiomatic to say that any disease which may cause heart muscle changes may also initiate arterial changes or renal changes unrecognizable until many years later, when the already weakened system has to bear the burden of increasing years and increasing effort.

When recognized, the damage is done. In this particular instance, the practice of preventive medicine might actually obviate many of the diseases of middle and later life now classified as of "obscure etiology." Were the possible cumulative effect of damages from repeated slight insults to the human body kept in mind, we practitioners would insist on a more vigorous convalescent treatment of even mild infections. Bridgman has already shown how much too short the ordinary convalescent period of a pneumonia patient is. The same thing is probably true of the convalescent period of any acute infection.

We might refer to the prophylactic importance of proper dietetic regulations and to the inherent dangers of periods of deficient food supply. In the succeeding number of *THE NATION'S HEALTH* attention will be called to the work of Blunt and Wang on vitamins. A period either in childhood or later life in which some essential accessory food factor may be lacking certainly produces definite symptoms. It is indeed possible that less glaring examples of the same deficiencies may be responsible for some of the ailments of later life.

The practice of preventive medicine in the individual case finds no better example than in the discussion of developed cardiac diseases. The history of cardiac patients depends to as great an extent on the social and economic status of the patient as on the condition of the heart itself. Hospital records show that the ward service will have many repeaters with heart disease. These repeated attacks of decompensation are preventable in most instances and, though the problem is not entirely individual, it is the function of preventive medicine so to handle the individual cardiac patient as to make it possible for him to carry on only the amount of work just under his minimum efficiency. Many such patients can be prevented from having recurrent attacks and also can lead healthful and useful lives if the period of convalescence is sufficiently prolonged.

It has long been recognized that the object of treatment of patients with pulmonary tuberculosis, especially those of the poorer class, is not only restoration to physical health, but also to economic efficiency. Simply to send a wage earner

away for six months' vacation means nothing: the practice of preventive medicine would aim to keep up this man's family unit and to restore him to a position where it would be possible for him to support a family and maintain his health at the same time. In surgery, again, the opportunities for individual prophylaxis occur almost continually. The man with flat feet or broken arches may have symptoms easy enough to relieve, but if he is not to become a burden to himself and the community, he must be prevented from having future troubles, the basic cause of which probably lies in the nature of his occupation.

In conclusion, it seems well worth while to call attention to the opportunities which lie at the door of each individual practising physician to do his share in the great program of preventive medicine. It is not necessary that he take part in anti-typhus or anti-typhoid campaigns. If he remembers that each patient whom he sees offers a problem of prevention and if he is willing to speculate a little concerning the past and future, he will have no difficulty in realizing his opportunities.

S. S.

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### Announcement of Child Health Demonstration

**A**NNOUNCEMENT has been made through the Child Health Council that an appropriation of \$200,000 has been set aside for the purpose of developing in some typical American community of between 20,000 and 30,000 population conditions as nearly ideal as possible for the nurture of children from babyhood to adolescence.

That such a scheme has found financial and scientific backing through the six leading national health bodies is significant in itself of an awakened consciousness of community responsibility for the development of children into sturdy, happy, useful citizens. What it is possible to do in the way of making conditions favorable for the proper care of the children has heretofore been attempted only sporadically and spasmodically. No consistent program has ever been fully carried out. What is possible of accomplishment, therefore, can only be conjectured. It may safely be asserted that Nature has never been given a similar chance in a similar scope to show what she can do for her children. Artificial conditions hamper their growth and put inhibitions upon inherent physical and mental capacities that never find full play. Before we are willing to accept as inevitable the high percentage of handicaps prevalent in children of school age and in young adults, some such demonstration is in order.

The community for the demonstration is yet to be selected. Its choice should be the object of the keenest competitive effort on the part of all cities who are forward looking in community effort.

The committee which will recommend the town to be chosen for the experiment, consists of Dr. Richard A. Bolt, of Baltimore, general director of the American Child Hygiene Association; Miss Ella Phillips Crandall, of New York, formerly director of the National Organization for Public Health Nursing; Dr. Charles J. Hatfield, New York, director, National Tuberculosis Association; Owen R. Lovejoy, New York, general director, National Child Labor Committee; Miss Sally Lucas Jean, of New York, director, Child Health Organization; Dr. Haven Emerson, former health commissioner of New York, and Dr. Donald B. Armstrong, Framingham, Mass.

The direction of this novel health experiment will be under Clarence King, who is widely known in the field of research and the administration of health and social work. He holds degrees from the University of Wisconsin and Columbia University.

### How Do American Cities Provide for Public Comfort?

A NATION-WIDE survey of public comfort stations just made by *Domestic Engineering* and published in a current issue brought replies from 120 cities each with a population of 25,000 or more. The question, among others was asked, how many cities had stations equipped for both men and women and what the buildings cost, how many were recently erected, and how many within the last twenty-five years. An analysis of the data showed that 67, or 56 per cent were provided with stations, totaling 173, an average of 2.6 to a city. Twenty-nine cities had one station; 18, 2; 5, 3; and one, 12. Thirty-one cities, or 26 per cent, had plans under consideration, while of the remaining 74 per cent, 42 cities, or 35 per cent, report that because of lack of funds, no comfort stations were planned. Fifty-three cities, or 44 per cent, were without any stations whatsoever, and 11 others stated that no progress is being made toward remedying the situation.

The usual method of support is taxation. Provision for ample public toilet facilities in any city does not need support by argument, but it is astonishing to observe the general lack of attention given to the situation. Several features must be incorporated in a modern station: it must be sanitary, well lighted, and properly ventilated. Asheville, N. C., recently completed an under-

ground structure at a cost of \$28,000 which sets an example in arrangement and equipment that might well be followed by every city in the United States.

Possibly the first public convenience of any kind was established by New York City May, 1869, in Astor Place, as a result of some twelve years fight by sanitarians. According to our present standards it was poorly placed, crudely constructed, and badly kept. In 1896 there was a movement for the erection of convenience kiosks, Paris style, since which time 1,900 various types of constructions have been tried out. During the years 1919, 1920, and to date in 1921, 27 buildings have been erected in various sections of the country. Portland, Ore., erected a building costing \$47,000, Minneapolis, Minn., \$37,000, and Allentown, Pa., \$42,000.

Those cities not maintaining stations assign various reasons for their laxity: ten pointed out a lack of funds, some the lack of suitable sites. The fact remains, however, that public comfort stations are greatly needed and are an asset to every community.

### William Thompson Sedgwick Pioneer in Health Work\*

IN THE death of William Thompson Sedgwick, on January 25, America has lost her most distinguished educational leader in the field of public health.

Sedgwick graduated from Yale in 1877 and took up the study of medicine, but the methods of medical education which then prevailed did not enlist his interest. He went to Johns Hopkins in 1879 (Ph.D. 1881), and under the influence of Martin became a biologist and perhaps the leading exponent in this country of the broad and fundamental viewpoint which Huxley had impressed upon this science, a viewpoint which was the basis for all of Sedgwick's later thinking. In 1883 he was called to the Institute of Technology, to whose service he gave himself with unsparing devotion for thirty-seven years. His special bent was at first toward physiology, and to the end of his life the problems of personal hygiene had a peculiar charm for him. In the earlier eighties, however, the new science of bacteriology was just beginning to open alluring vistas of knowledge, and of usefulness. Sedgwick at once grasped the significance of the work of Pasteur and Koch and, when the Massachusetts State Board of Health was reorganized in 1888, he was appointed biologist to the Board and became a pioneer in the application of bacteriology and microscopy to the

\*This tribute to Professor Sedgwick was written by Dr. C.-E. A. Winslow in Geneva, Switzerland, and forwarded for publication in THE NATION'S HEALTH.

sanitary and environmental side of public health. He and his colleagues in Massachusetts did for this branch of bacteriology what Welch accomplished for its pathological bearings in Baltimore, and Prudden, Biggs, and Park for its diagnostic and serological aspects in New York. In the allied field of epidemiology, Sedgwick's studies of water and milk epidemics were of the first importance.

It is perhaps fortunate that the medical curriculum of 1878 failed to hold the interest of Sedgwick, for as events transpired he was able to perform a function of peculiar importance—to create practically a new profession of public health, outside the field of medicine itself. Before 1890, what sanitation existed was chiefly a by-product of medicine, as is still largely the case in Europe at the present day. Under Sedgwick's influence, however, the rôles of the public health engineer and the public health bacteriologist were definitely made clear, and even in general administrative positions men soundly trained in public health, but without the medical degree, have held their own with distinction. This phase of Sedgwick's life work found a logical development in the plan which he put forward in an address at the University of Cincinnati, only a few months before his death, for a reorganization of the medical curriculum so that, after the first two common years of preclinical study, the student might choose between two alternative junior and senior courses, one leading to the Doctorate in Medicine and the other to the Doctorate in Public Health. Although the expansion of administrative public health work to include dispensary organization and hospital management is likely to render the purely medical aspects of the subject of increasing importance, it is now clearly recognized that the medical curriculum must be supplemented, if not in part replaced, by specific training in public health in order to equip for adequate public service, a result which is largely due to the initiative of Sedgwick, and his colleagues and pupils at the Institute of Technology.

Sedgwick was far more than a biologist and a sanitarian. He was a good citizen; and his counsel and his energies were always at the call of progressive civic movements. As a member of the Advisory Board of the United States Public Health Service, of the International Health Board, and of the Public Health Council of Massachusetts, as president of the Board of Trustees of the Sharon Sanatorium, as trustee of Simmons College, as chairman of the Board of Trustees of the Pauper Institutions of Boston, as a leader in the fight for Civil Service Reform, and as curator of Lowell Institute, he set an example of fruitful service to the city and state and nation. On the

very evening of his sudden death, he attended a meeting in the interests of a state university.

Above all, however, Sedgwick was a teacher. Through his many addresses, which were always informing and distinguished, as well as singularly effective from a popular standpoint, and through his "Principles of Sanitary Science," which many academic generations have found of absorbing interest, he reached an extraordinarily wide public. Yet in the end the most far-reaching influence of his beneficent life will probably be found in the relation he bore to the group of students who came, in the laboratories of the Institute, under his direct and intimate guidance. From Jordan and Whipple, and Mathews and Calkins, down through the later years, Sedgwick's pupils have gone out as teachers and investigators and public servants, and there is scarcely an important step in the progress of public health during the last three decades in which they have not played a notable part.

Sedgwick brought to his task as a teacher keen powers of observation and a tireless curiosity. He had a broad background of culture, based both on reading and on travel. He saw every phenomenon in its relation to the past and the future, and to the underlying philosophy of life; and his own philosophy was rooted in a calm and serene acceptance of the universe and its fundamental righteousness. He knew his students intimately, knew their faults and their limitations, but fostered their latent possibilities with an unfailing optimism. He was more than a teacher; he was in actual truth a second father to hundreds of young men. The supreme things that he taught them, by example rather than by precept, were the love of exact truth and the spirit of self-forgetful service; and the torch which he kindled will be transferred by reverent hands to future generations.

C.-E. A. WINSLOW.

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### Baths as They Affect Community Health and Morals

A PROMINENT social worker in Chicago some days ago made the statement that in relieving unfavorable conditions as affecting family life, physically and financially, the chief factor to be considered is the housing condition. When an agency is able to give a family room enough—with privacy and adequate sanitary provision—self-esteem returns and other questions largely take care of themselves thereafter. So potent a force is the matter of personal cleanliness, it may be axiomatically stated that "the washed" belong to the elect, and "the unwashed" to the common herd.

On another page of this issue the statement is



made that the "lot of the submerged tenth" is insupportable largely on account of the inadequacy of general sanitary provision in rooming houses; and again, in the discussion of the means of making dusty trades safe for the workers, comment is made that the chief advantage of exhaust systems over wet grinding is that it is cleaner and "more comfortable to the worker, and less likely to produce discontent among them." No single measure is more important for the comfort and self-respect of miners than provisions for "cleaning up" after their work, and in many industries the showers constitute a most important part of the equipment.

All of this has to do, however, with the hygiene of personal habits, of cleanliness rather than bathing as a factor in industrial hygiene. Some of the older psychologists held that, the preference for cleanliness being universal, it could be assumed that there is an instinct for cleanliness.

Without arguing for an instinct for cleanliness, it may be pertinent to observe that too often health programs go far afield in finding causes and remedies for social ills, becoming ineffectual through broad generalizations, when correction is simple and ready for application in concrete problems of ventilation, or plumbing, or illumination. Bathing, for instance, is a salutary habit which will become more popular when baths, public and private, are universal; it will not be considered a measure sufficiently used when the bath is employed merely for cleanliness, but the importance of the bath will have more attention as to its frequency, its duration, and its purposes when employed to promote rest and relaxation, for the benefit of its stimulation, and even for its therapeutic uses. From the "Bath-a-Day" campaign instituted by a contemporary magazine we take the assertion that it is not to be taken for granted that even among "the washed throng" people know enough about the value of the bath to get from it the fullest possible quota of benefit.

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IT IS a matter to cause some concern that in most of the forty-two legislatures meeting this year a halt has been called in legislation dealing with the improvement of conditions affecting little children. At the same time, largely because of unfavorable industrial conditions, child labor has shown an increase during recent months.

Every one who is interested in securing a fair chance for the children should interest himself and learn the actual status of childhood in his own community and should stand back of constructive work for better schools, better school laws, and supervised work and play activities.

Reliable data on research in eight different departments, including juvenile courts, recreational life, child labor, schools, children on farms, health, administration of laws, and statistical research, may be had through the National Child Labor Committee. Intelligent public opinion must back the necessary legislation. The future lies with the children.

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CAPTAIN F. L. BEALS, U. S. A., whose article on the health problems of the summer camp is printed herewith, is an authority on the subject. He is professor of military science and supervisor of physical education in the Chicago public high schools and the founder of Camp Roosevelt, the official summer camp of the boys from the Chicago high schools. He approaches the subject of camp sanitation and camp health from the standpoint of practical experience and his opinions are worthy of special consideration.

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A NEWS announcement from New York City states that according to the report of the chief medical examiner of the city, suicide among married males and females is nearly twice as great as that among single people. Much comment will be produced by this item, but until all the factors are weighed no conclusion can be drawn. For instance, the age factor is important. The married people have a much higher average age and consequently there is much more likelihood of mental breakdown. In the meantime the paragraph writers of the newspapers will have fun with the infelicities of married life.

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THE official census of Japanese recently completed does not seem to bear out the statements of the great increase in the population of the country. The total population of Japan proper was found to be 55,961,140 and of the empire 77,005,510. The figures for the Japanese was somewhat under the official estimates of 1918, due probably to the fact that the census was the first to be conducted with modern census taking methods.

Vital statistics recently compiled are not reassuring to the Japanese. The death rate for males in 1918 was 26.93 per thousand, and of females 26.73 per thousand, figures which are far in excess of Western countries for the same year. The births for that year exceeded the deaths by only 300,000.

An alarming fact is also disclosed by the statistics published, in that the divorce rate was 112.8 per thousand marriages.

# HEALTH IN INDUSTRY

*Official Organ of the American Association of  
Industrial Physicians and Surgeons*

*Editors for the Association*

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## Health Problems of Women in Industry

**Expert Inquiry in this Field Must Precede a  
Statement of the Case of the Woman in Industry**

BY MARY ANDERSON, DIRECTOR, WOMEN'S BUREAU, UNITED STATES DEPARTMENT OF LABOR, WASHINGTON, D. C.

PRACTICALLY speaking, the entire program for the regulation of work for women in industry is based upon the power of the state to protect health. It is the recognition by the courts of the special significance to general welfare of the health of women combined with the more serious effect upon women than upon men of long hours, low wages, and unhealthy working conditions, which has resulted in the upholding of laws regulating such conditions. With the legal sanction for such regulation once given, legislation of one sort or another affecting conditions under which women may be employed has been put on the statute books of every state in the Union except New Mexico. These laws vary in the different states, of course, ranging all the way from a careful regulation of hours and wages and a very definite supervision and control of working conditions in states such as Oregon, California, and the District of Columbia, to the requirement simply of seats for women workers in certain occupations in Alabama, Florida, and West Virginia.

### Standardization is Essential

In spite of the fact that the theory justifying the power of the state to make these regulations has been so generally accepted, the regulations enforced have varied to such an extent that no two states have established the same standards. For this

reason one of the earliest tasks undertaken by the Women's Bureau when it was first organized was to formulate definite standards for the employment of women in industry, which could serve as a guide to the many different groups who were working for the better protection of wage earning women.

The standards thus formulated cover conditions only in a general

gram and the creed of the Women's Bureau are:

The eight-hour day.

Saturday half-holiday.

No night work.

A living wage based on occupation and not on sex, with the minimum rate sufficient to cover the cost of living for dependents and not merely for the individual.

Good working conditions, including adequate washing facilities; adequate and sanitary toilet accommodations; dressing rooms, rest rooms, and lunch rooms; clean workrooms with carefully adjusted lighting, ventilation, and heating; plentiful and sanitary drinking facilities; chairs, machines and work tables adjusted so that the workers can either stand or sit at their work; carefully guarded machinery; elimination of the necessity for constant standing or other posture causing physical strain, repeated lifting of heavy weights or other abnormally fatiguing motions, and the operation of mechanical devices requiring undue strength; exposure to excessive cold, or to dust, fumes or other occupational poisons without adequate safeguards against disease.

Prohibition of employment of women in occupations involving the use of poisons which are proved to be more injurious to women than to men.

Prohibition of home work.

Establishment of systems of employment management.

Cooperation of workers in establishing standards.



America will be as strong as her women.

way, but they are the fundamentals which apply to all industries and all occupations. Qualifications and elaborations may have to be instituted to meet special cases and peculiar conditions, but the fundamental standards necessary to insure health and efficiency will not be altered. Briefly stated, these standards for women in industry which constitute the pro-

In this group of standards there readily are found many recommendations which apply fully as strongly to men as to women. For instance, there is no indication that bad ventilation in a workshop is a more serious menace to women's health than to that of men, nor that it has any distinctive effect upon women. Insufficient ventilation will lower the efficiency and the ability to resist disease of both men and women, and it should be recognized as a problem for all employees, in all industries, under all conditions.

The prevention of glare by properly placing and shading lights is another working condition which is not particularly a woman's problem, but instead is a problem for all in industry.

### Specially Applied to Women

In fact, very few, if any, of these recommended standards can be said to apply only to women, and the Women's Bureau does not advocate that they should be considered as applying only to women. The important thing about them is that they apply *especially* to women. For all conditions in industry bear particularly heavily on women, and therefore good working conditions, hours, and wages have a more important relation to their health. Long hours in the factory are not as serious for the man, who is through work when he leaves his job at night, as they are for the woman who has often several hours of housework to do after she gets home. The married woman in industry, who is forced to work because of economic necessity, brought about by her husband's death, incapacity or inability to earn an adequate wage for himself and his family, must usually take whatever job she can get, without too much question of wages or hours. But she is the one worker in all the group who most needs the protection of the law, for the care of her children and household will take many hours and much strength, and her health will suffer if hours of work are not limited.

Perhaps the greatest two health measures which industry can institute for all workers, but particularly for women who are not organized so that they can make their own demands, and who are massed in the low paid industries, are the eight-hour day and the payment of a living wage. It has already been pointed out how the long hours are a special hardship for women, but the low wage paid to the average woman

worker is an even greater menace to her health.

A recent investigation made by the Women's Bureau disclosed the fact that in the main industries in Kansas in 1919 and 1920, the median wage paid to women was \$11.95, with 20 per cent of the women earning an average weekly wage of less than nine dollars. The Ohio Council of Women and Children in Industry has found that 14 per cent of the women in that state were receiving in 1919 less than \$10 a week and 52 per cent less than \$15 a week. The Women's Bureau found that in 1920 half of the women employed in the industries of Atlanta, Ga., were receiving less than \$11.70 a week. Conditions such as those exist throughout the industries where women are employed and the standard of living which a wage of around \$12 a week must require should certainly be recognized as a

or father who has died or been incapacitated.

### The Pin-Money Fallacy

With this great necessity upon them for an adequate wage, women must struggle constantly against the old "pin-money" fallacy. A man feels that wife and children or other dependents are something of a burden, but he is recognized as the breadwinner, or the potential breadwinner, for a family group, his wages are based accordingly, and his burden is lightened. A woman may, and often does, have an equally heavy burden of dependents, but this burden is not made lighter for her by the popular superstition that she is working to make a little extra money, and will soon get married and be on "easy street" for the rest of her life. The Women's Bureau hopes shortly to have comprehensive figures showing



New York State Lumber Jacks. One employer said he preferred women to men because women always carried two planks at once if they could possibly manage it.

condition which will sap the health and vitality of a large group of workers.

This is particularly true when the woman worker is recognized as a provider not only for herself but frequently for dependents as well. The responsibilities of the wage-earning woman and her contribution to the support of others, mother, father, sisters, brothers, husband, children, have not yet received full recognition from industry or from the general public. Yet every investigation which touches wage-earning women piles up the evidence that women are working more often than not to eke out some husband's or father's insufficient wage and make it adequate for the family needs, or to earn the wage which had formerly been earned by a husband

the extent of the responsibility for the support of others among wage-earning women. Even before this material is prepared, however, there is ample evidence that this responsibility is much greater and more universal than is generally supposed.

Aside from hours and wages and general working conditions, there are certain conditions in industry which need to be especially studied for their effects on the health of women so that proper regulations may be instituted for their control.

The very widespread use of the piece work system in industries where women are employed is a condition which is now challenging much attention. Nearly every manufacturer will say that he employs women most successfully on the repetitive pro-

cesses in his plant, the processes that require an infinite number of rapid repetitions of the same movement such as placing small bits of metal under a press and releasing the press so that the metal is cut or hammered into shape; feeding machines which place the caps on tin cans, which means putting one tin can after another in the same place as fast as the hands can move; wrapping and packing cigarettes; or running an electrically driven sewing machine which makes two thousand or more stitches a minute. Such occupations, which are paid for by the number of finished articles turned out, naturally are carried on at full speed, in some cases under conditions of machinery or kind of work which require very careful attention. The pathological effect on the nerves and health of a woman of this continued tension and activity has never been definitely determined. Any casual observer of women working at these processes will know, however, that they must have pathological significance. Indeed, when girl after girl in a group of cigarette packers is found to be afflicted with a constant jerking or rhythmic motion of her body which follows the motions she makes while at work, resulting in extreme fatigue and nervousness, it would seem that the effect of the speeding up of piece workers in some occupations was so obvious as to need but little research to stamp it as being a serious menace. There is great need for careful and full examination of the effects of this system in order that it may be properly controlled.

Posture at work is another subject which has received insufficient attention, although the need of some regulation has been more generally recognized. It is very common to find state laws requiring that seats be provided for women who are employed in industry, but there has as yet been no definite standard established of the kind of seat that should be required. An old box with a plank

some of the seats which are commonly found where women are employed. Many requests are made to the Women's Bureau by managers of factories for descriptions of the best type of factory chair for women, but so far no investigation of the subject has been complete enough to warrant a definite recommendation. The fundamentals of proper seating, the need for a back, footrest, rounded front to the seat, and individual adjustment, have been established, but there is still much which needs to be known from the medical end of the question before a complete seating "code" can be formulated.

Very little has been gathered of the effect upon women's health of continued standing or sitting. Standing, of course, has received more attention as its effects are more quickly noticed, but that sitting for eight, nine, or ten hours a day can in itself be harmful is a new idea to many employers as



A study in posture. A precarious footing and an uncomfortable seat for women cutters in the shoe industry.

well as to the workers themselves. It is quite possible in the majority of cases to regulate the height of work table and chair so that a worker may either sit or stand conveniently at work, but before such a treatment of the problems of posture can become general, the need for it must be very strikingly illustrated by a definite account of the effect on a woman's health of too much standing and sitting.

An attempt has been made in several states to fix a standard weight which a woman may lift without harm to herself, but as this has been



This arrangement is a makeshift adjustment. No back rests or foot rests are provided.

done with apparently little medical knowledge or study of the subject, the legislation is haphazard and may result in unnecessarily restricting the employment of women.

In Ohio and Pennsylvania a woman may not lift a core and core box the combined weight of which is more than fifteen pounds. In New York women in the core rooms of foundries are prohibited from lifting more than twenty-five pounds. There is a very great difference between fifteen and twenty-five pounds, and it is obvious that if fifteen pounds is all that a woman can safely lift in Ohio and Pennsylvania, the women of New York are being permitted to endanger their health; while if twenty-five pounds is safe for a woman in New York to lift, the women of Pennsylvania and Ohio are being unnecessarily restricted in their work in core rooms.

There are so many ways in which a weight may be lifted,—up or down, continuously or occasionally, pushed or pulled,—and the way of doing it, whether with the arms or back, with a sudden effort which might wrench or strain, or with a careful coordination of all the muscles which can be brought into play, may vary so with each individual that the standard amount which can be lifted safely will be very difficult to arrive at. If any such restriction is to be imposed, it should be done only after a very careful examination of the effects of lifting and a very minute description of the surrounding conditions which would render the lifting of such a weight a menace to health. In this case, again, adequate testimony on the subject is totally lacking.

In addition to the more or less mechanical conditions such as seating and lifting which may affect the health of women, there is another and very broad field which research has

## ..HAPPINESS..



No night work, but normal sleep for women workers.

nailed against it for a back, a high stool with no back and no footrest, a barrel, a wooden kitchen chair, are

hardly touched. This is the peculiar effect upon women of certain fumes and gases used in industrial processes. It has been established without doubt that the effect of lead poisoning incident to exposure to lead in the form of dust or fumes, has a much more serious effect upon women than upon men. It is known that lead poisoning in women may result in sterility or in children being born dead, or in more of their babies dying during the first year of their lives. Such results have not been found in the case of men who have suffered from lead poisoning, and, because of this knowledge, in some states women are legitimately barred from employment in occupations where the danger of contracting lead poisoning is great.

It was only a careful study of a large number of cases of lead poisoning among men and women over a considerable period which produced the evidence which established the fact of the heightened susceptibility of women and its definite effects upon them. Women are working in many other occupations in which they are exposed to poisonous fumes and dust, but no evidence is yet forthcoming to show to what extent these elements are particularly dangerous to them, and without such evidence there can be no just and wise regulation of their employment.

The present day is hearing a great cry that women should be given equal opportunity with men for all occupations in all industry, but even the

most ardent of these exponents of the new creed of feminists will pause before a presentation of the case for better protection of working women based on a scientific study of the effect on their health, and that of future generations, of exploitation, long hours, low wages, and improper working conditions. The women of today as well as their employers "come from Missouri." No sentimental or idealistic appeal will be sufficient for either of them now. They want facts, and if the facts are presented strongly and clearly they will get action. But the facts must be collected first, and the field is open and crying for attention from scientists and health experts as well as from industrial engineers.

## Experiments in Control of Air Dustiness

By O. M. SPENCER, PAST ASSISTANT SURGEON (R), UNITED STATES PUBLIC HEALTH SERVICE, WASHINGTON, D. C.

THIS discussion will deal with the results of some recent studies, made by United States Public Health Service officers, of air conditions prevailing in certain occupations and having a tendency to excite or accelerate the development of tuberculosis.

It is commonly known that there are certain principal occupations creating air conditions that tend to produce characteristic fibroid changes in the lungs, commonly designated as pneumoconiosis, which changes predispose the worker to infection from the tubercle bacilli. I refer here to such trades as those followed by cutlery makers, filers, grinders, abrasive workers, polishers, buffers, manufacturers of jewelry, brass workers, finishers, sand blasters, saw filers, tool-makers, glass blowers, glass workers, cotton workers (because of mineral substances used in sizing), marble and stone quarry men, molders, potters, miners of copper, gold, silver, graphite, iron, lead, zinc, mica, phosphate, spar, and quicksilver. These trades are typical, and the list inserted here is not at all complete.

### Air Purification Called For

We have become accustomed today to certain standard methods for air purification in industrial plants. These methods take the form of hoods, exhausts, and fume lines usually beginning at or near the work plane and following certain engineering specifications, exhausting at a place sufficiently remote and protected

to control the hazards arising from the occupation. In certain occupations where it has been thought that such fume lines could not be satisfactorily installed and operated, wet processes have been introduced. In point of origin, the wet process antedates the exhaust as a means for controlling dusty operations. To a large extent these two processes have given a sense of security to the operator and the operative.

States as governmental units, and, in some instances, municipal authorities, have endeavored to standardize such safety devices by fixing the size of the fume line, the number of branches that may enter a main without increasing the size of the main, the angle at which such branch pipes must enter the main pipes, the strength of the exhaust as determined by anemometer or U-tube readings, and like precautions. These regulations, occasionally enforced by factory inspection, have given an added sense of security to the hazardous occupations. The great question is, however: Is this sense of security fancied or real? Certain observations made by officers of the Public Health Service aroused a doubt as to the adequacy of these so-called protective devices and led to a comprehensive research.

All dust counts mentioned in this work were made from samples collected by the Palmer water-spray machine, and refer to the number of one-fourth standard unit dust particles per cubic foot of air, as classified

by Palmer,<sup>1</sup> and arranged according to size, from 1 to 10 microns. It was shown by Dr. McCrea, in the report of the Miners' Phthisis Prevention Committee, of Johannesburg, South Africa,<sup>2</sup> that the dust extracted from the lungs of deceased miners by acid oxidation consisted of particles from 12 microns to less than 1 or 2 microns in diameter. The majority of particles is found in the smaller sizes.

### Two Types of Control

It has been the almost universal belief that, of the two main types of control of air dustiness, wet grinding is safer and has a smaller dust hazard than dry grinding under an exhaust system. This in some instances has been proved false by recent studies conducted by Winslow and Greenburg in an ax-grinding factory.<sup>3</sup> In this plant the owners were worried by the dry grinding with an exhaust system and were satisfied with a wet-grinding process, and so sought advice as to a feasible plan for correcting the former.

Dust counts of samples were collected by the Palmer water-spray machine in the wet and dry grinding shops by Winslow and Greenburg, with the following results:

1. Palmer, G. T., Coleman, L. V., and Ward, H. C., A Study of Methods for Determining Air Dustiness: American Journal of Public Health, 1916, VI, p. 1049.

2. Miners' Phthisis Prevention Committee—General Report. Johannesburg, 1916.

3. Winslow, C.-E. A., and Greenburg, Leonard, A Study of the Dust Hazard in the Wet and Dry Grinding Shops of an Ax Factory: Public Health Reports, Oct. 8, 1920, XXXV, No. 41, pp. 2393-2401. Reprint No. 616.

WET-GRINDING SHOPS

Number of samples	Number of dust particles per cubic foot of air (One-fourth standard unit)		
	Minimum	Maximum	Average
32	870,000	50,000,000	15,800,000

DRY-GRINDING SHOPS WITH EXHAUST SYSTEM

Number of samples	Number of dust particles per cubic foot of air (One-fourth standard unit)		
	Minimum	Maximum	Average
10	51,500	400,000	154,500

These experiments not only showed that the wet grinding was hazardous and gave a false sense of security, but they also showed that the exhaust system in the dry-grinding plant was adequate.

Two important facts stand out as a result of this test: one is that wet grinding was not, here at least, a safe method; the other is that the methods of testing adopted in this test give an actual picture of the efficiency of the system of dust reduction installed.

A survey of another plant was made by Scientific Assistant Myron Bantrell,<sup>4</sup> and dust samples from which counts were made were taken in various rooms of the plants. The counts were of one-fourth standard unit dust particles and ranged in number from 69,000 on the roof of building to 5,548,000 in the grinding room. The average number of particles in the grinding room was 2,841,000. These conditions prevailed notwithstanding the fact that the management complied with the state laws in every way in its wet-grinding process, using a special compound of oil and water.

### What Constitutes Safety

This survey brings out the important fact that even a strict compliance with the present laws in regard to wet grinding does not always prevent a dust hazard, and that it is absolutely necessary to have some definite method of checking up the efficiency of dust-prevention devices after their installation.

On the other hand, dry grinding with an exhaust system also has dangers and shortcomings; for care and attention must be given to the size and location of the hoods, the angle of taper of the ducts, the angle at which the branch pipes enter the main pipe, the use and size of the

bends and elbows, the plugging and stoppage of the screens in the hoods, and, the most important factor, the suction maintained at the terminal hoods.

Using the popular U-tube method of testing the suction in the exhaust pipe, and the Palmer dust machine to count the dust particles in the air, Winslow, Greenburg, and Angermeyer<sup>5</sup> made a special study in the polishing shops of a small-arms plant by making observations in pairs: first, under normal conditions, with the exhaust system working, a dust count was made; then the doors in the main exhaust ducts were opened between the fans and the hood, and after an interval of 5 to 10 minutes, the work process being continued, a second dust count was made.

The results of these experiments showed that a reduction in the suction head readings of the U-tubes is quickly followed by an increase in the air dustiness; and a tabulation of the suction head pressure and the number of dust particles in these experiments proved that there is a definite relation between the suction head in the exhaust and the dust in the air, provided there is no interference with the exhaust system between the point of the U-tube reading and the polishing wheels. And it is this possible defect in the arrangement of the hood with regard to slope, size, position, angle, and partial or total stoppage of the screen, that forces us to realize that the U-tube test is not always one of accuracy and reliability.

Not only do these experiments demonstrate this fact, but they demonstrate the fact that only by the actual dust count at the plane of work and of the atmosphere of the room could the efficiency of the exhaust system be checked or relied upon.

The air exhaust has certain advantages in sanitation, because the worker can not, by cutting off the fluid, convert the wet method into the dry method; there is no deflected spray in the dry method causing the clothes of the worker to become damp; hoods can be arranged in the dry method to catch any particles of dust liberated; the suction head at every grinding wheel can be tested in the dry method and a comparison of the amount of dust produced by each worker can be made, and in this way any defects in the separate hood and branch line can be located. There is

no stream of water or other liquid to be kept fixed on a certain point in the dry method. The dry method is cleaner, more comfortable for the workers, and less likely to produce discontentment among them.

The important point, however, in connection with the installation or maintenance of either the wet or the dry system, is that the supervision of its operation should guarantee efficient control of the dust caused by the process. This can best be accomplished by use of a dust sampling machine and a dust count.

Palmer, Coleman, and Ward recorded the following dust content of the air of the city streets and occupied space where no particular dust hazard exists:

Source of samples	Number of samples	Average total count
Outdoors — Balcony City College.....	3	153,000
Outdoors — Woolworth Building (street level, 10th floor and 58th floor)	3	71,000
Business office.....	2	150,000
Department store, basement .....	4	108,000

This and the previous counts made under varying conditions demonstrate a method whereby standards for dustiness in any or all processes may be established. Physical examinations of the exposed workers, as well as x-ray plates of the lungs, in an intensive study over a long period of time, to see if the standard adopted for certain processes prevents the fibroid changes in the lungs produced by pneumoconiosis, must yet be made before any tentative standards can be accepted as adequate. It is in this direction that future work in dustiness must be conducted in hazardous industries to make the workplaces safe for the employees. This applies not only to grinding and polishing and to wet and dry exhaust systems, as here mentioned, but to all occupations and processes where dust hazards exist.

It has been shown that the present methods used for removing dusts are subject to many faults and defects, and that it is only by an actual dust count at the plane of work and in the room or at the place where the process is being conducted that we can determine the efficiency of the system and the amount of protection that is afforded the worker; and that tentative standards of dustiness can be created, by making dust counts in any place and under any conditions desired, pending a study of living

4. Bantrell, Myron. A Study of Occupational Health Hazards.

5. Winslow, C.-E. A., Greenburg, L., and Angermeyer, H. C., Standards for Measuring the Efficiency of Exhaust System in Polishing Shops; Public Health Reports, March 7, 1919, XXXIV, No. 10, pp. 427-449. Reprint No. 509.



conditions to change the tentative to real standards.

### The Needs Summarized

I believe that I have made clear the following needs in the study of the control of air dustiness:

(1) The necessity for establishing a "standard dust table" of the number of dust particles of a certain size permissible in all dust-creating or dust-hazardous processes and occupations.

(2) The necessity for checking the

efficiency of all dust-removing systems or devices at regular intervals by an actual dust count at the plane of work and in the workroom, which count must come within the limits prescribed by the "standard dust table" for that particular process.

If these two suggestions should be adopted and included in every State law for the control of air conditions in industries, the amount of pneumoconiosis would be unquestionably reduced, and the mortality from tuberculosis in dusty trades diminished.

If, in addition to the establishment of the "standard dust table" to routine procedures of factory hygiene, and regular testing of dust-removing devices in plants by actual dust count, intensive education of employees as to their constant danger of tuberculous infection at home and in the plant is carried out and workers come to realize the hazards to which they are subjected, we may expect to lower the present industrial mortality rate from tuberculosis to that of the ordinary death rate.

## Labor Shows Constructive Initiative in Health

### A Demonstration of What Unionism Has Accomplished in Health Conservation

BY I. A. GALDSTON, M.D., EDUCATIONAL SUPERVISOR, JOINT BOARD OF SANITARY CONTROL, NEW YORK CITY

**L**ABOR'S lack of constructive initiative and managerial power is the final and all sufficient justification of their stand given by those who oppose the proposed changes in our current economic relation which have as their aim to give labor a greater share in the control of industrial affairs. When, therefore, certain institutions are in the course of events created by labor to serve certain of its vital needs, it is incumbent upon those interested in the validity of the claims against labor, set forth above, to examine into the nature and operations of such institutions and note the extent, if any, to which these refute the charges. Especially is this the case when such

institutions are not in duplication of ones established and operated by non-labor groups, but, quite the contrary, are innovations and pioneer organizations. The Union Health Center of the International Ladies' Garment Workers' Union is just such an institution.

#### Care for the Middle Class

During the agitation of last year, centering about compulsory health insurance, one point was brought to light which could not be refuted, and which had to be admitted even by the most bitter opponents of the proposed health legislation. This point dealt with the inadequate and incompetent medical attention which was afforded

to those with but a moderate income. As stated by the documents dealing with this question, only the very poor and the very wealthy receive sufficient and competent medical attention; the wealthy by paying the large fees charged by specialists, and the very poor by visiting the various hospitals and dispensaries in which the very same specialists are visiting and consultant physicians. The large middle group must do without such medical attention, because its members cannot afford the large fees charged by specialists, and because they will not suffer the inconveniences and implied poverty of a dispensary visit. This large group of our citizenry visits the doctor only when self-medication or the trust in things righting themselves avail no relief, and even then it is not always that they consult the most competent and most conscientious practitioners. It is a common experience of the physicians of the Union Health Center to have workers bring to the clinic series of x-ray plates for which sums varying from twenty-five to fifty dollars have been charged, and which have neither value nor meaning to the workers. So, too, many a worker, driven to distraction by some condition, the neglect of which has converted it from the simple matter it was, to the serious condition which it later becomes, falls victim to some unprincipled practitioner who exploits him to the utmost.

Of this large group of neglected cases the shop worker constitutes by far the greatest portion, and in addition to the other disabilities, he suf-



An average day and an average crowd in the Medical Clinic.



The waiting room in the Dental Department, the conference room in the foreground.

fers the handicap of being tied down to his job in a manner unknown to the office and non-shop worker, and with him, therefore, the problem is correspondingly more serious.

These conditions have prevailed for a long time, and have been long the common knowledge of those in the field of public health. Certain attempts, it must be stated, have been made to remedy the condition, but to date no competent solution has been developed. In Boston there is a co-operative clinic which has operated for several years, proving quite a success. In New York, during the past year, two attempts were made to establish such clinics, one at Mount Sinai Hospital, and one at St. Vincent's Hospital, but for reasons which cannot be entered into here, both failed. While these unsuccessful attempts were being made by social organizations, having at their command almost unlimited resources, and counting among those enlisted in their cause certain of our most competent leaders in the medical and social spheres, five locals from the International Ladies' Garment Workers' Union, numbering in membership sixty thousand, determined to try their own hand at solving that portion of this health problem which confronted them. They voted the sum of \$55,000, for erecting and equipping a Union Health Center to serve as a department of health, a hospital, and clinic to the 85,000 members of the Union. Dr. George M. Price, the director of the Joint Board of Sanitary Control, was placed in charge of the work and within five months the Union Health Center opened its doors to the full membership of the

Union. In the process of construction more money was required and the original sum was augmented by an additional \$45,000 making an approximate total investment of \$100,000.

The Union Health Center, which stands on Seventeenth street opposite the Washington Irving High School, in addition to being the home of the Joint Board of Sanitary Control houses a Medical Division, a Dental Division, and an Educational Division. The Medical Division which, exclusive of the auditorium, takes up the entire ground floor, has daily clinics for general examination and treatment, as well as clinics in seven specialties. In addition, there are an operating room for minor surgery, an

x-ray room equipped to take any type of x-ray pictures, and a laboratory. The Dental Division occupies the second floor save for a conference room. Here there are to be found eight dental chairs of the most modern type, a dental x-ray room, an instrument room, and a dental laboratory. The Educational Division, which is part of the Joint Board of Sanitary Control, is with that organization on the third floor.

### Large Numbers Served

That the membership at large is appreciative of the Health Center can be seen from the large numbers that take advantage of its facilities. During the month of December the Dental Department treated 1,142 members, and the Medical Department, 560. Their confidence in it and its staff is of a degree seldom enjoyed by the private physician, for they reason that the Union Health Center and its staff are their own, and they can impute no ulterior or selfish motives to its practices.

In addition to the organization of the Union Health Center which is designed to give the worker the very best that his money can purchase and which seeks to avoid the dispensary atmosphere with all its austerity and accentuated asepis, its operation is such that when a worker joins the Union he is required to undergo a complete physical examination. He is passed upon, and graded in accordance with his health status. Where treatment is required, such is advised and administered. From the very day he joins the Union, his relations with the Union Health Center are organic



The Clinic includes a fully equipped operating room ready at all times for minor surgical work.



Health exhibits and health lectures in the auditorium help to make effectual the other phases of the service.

and intimate. He, and the immediate members of his family are entitled not only to examination and treatment, but they may come for advice as well, and the value of the last can be appreciated only by those who have seen the helplessness of a worker when sickness or accident comes upon him and his family. Whatever possible is done for him in the Health Center, and, when hospital and surgical treatments are required, proper arrangements are made for him.

All of the medical and dental work is charged for on a cost basis. Never the least implication of charity enters into any transaction, and those professionally associated with the clinic receive remuneration for their services which, while not equal to value received, taking all factors into consideration, still is up to the standard rates.

### Past Experimental Stage

The Union Health Center has been functioning for three months. During this period it has undergone a considerable modification, but it has served to realize at least a fraction of its possibilities. There is still a health school to be developed for the workers in which classes in the Union Health Center will be taught disease prevention; a life preservation and prolongation service is to be created, with annual physical examinations at an initial charge of five dollars, and a charge of three dollars for subsequent examinations; then there remain the possibilities of co-operation with the various other labor groups. Already complete arrangements have been made by the Center for cooperation with some

sixty physicians, to guard the health and render medical services to the members of the Amalgamated Clothing Workers Union, now in the midst of a strike.

There are great possibilities for the Union Health Center, whose value time will demonstrate, but even as it stands at present, the Union Health Center is a valid defense of labor against the charges of lack of initiative and managerial powers, and a challenge by achievement to organized society on the problem of health and life conservation. Further, it is a vivid and convincing demonstration of the truth that in health matters, as in economics, the salvation of the workers depends upon the workers themselves.



The Dental Department is made up of six such units as this, together with an x-ray room, an instrument room, and a dental laboratory.

## Slow or Chronic Poisoning by Illuminating Gas

The *Therapeutic Gazette*, March, 1921, comments on a paper by Dr. Wilmer, of Washington, before the Section on Ophthalmology of the College of Physicians, Philadelphia, relating to the effect of slow or chronic illuminating gas poisoning upon vision. Dr. Wilmer points out that it is not always illuminating gas, but also gas from furnace flues and range flues in such small quantities as not to be noticed by the inhabitants of the house but in a sufficient amount over a considerable period of time to produce very definite results. Carbon monoxid is a dominant factor. The changes in the body produced from exposure day after day for weeks at a time are little known, but the question of gas as causative factor can be more carefully investigated.

## Measures to Control Miners' Nystagmus

The *American Journal of Public Health*, January, 1921, outlines briefly an article of Sheffieldtham's which states that miners' nystagmus is the most prevalent occupational disease in Great Britain, and that there seems to be a standstill in the matter of its elimination. Dr. E. R. Hayhurst in commenting upon this states that in America there is very little evidence of this disorder and attributes its absence to the fact that American soft coal mines are not actually gassy to a dangerous degree, hence miners are not obliged to work under the poor illumination afforded by the safety lamps required by law in Great Britain.

In the same issue there is a brief extract on eye strain and motion picture theaters, summarizing the investigations of the committee of British ophthalmologists, the Illuminating Engineering Society, and the Physiological Society. Among the various points considered are: proximity and position of seats in relation to the picture, instability of projecting apparatus, faulty manipulation, and brightness of the pictures.

## Nursing for Trade Unions

The Cooperative Health and Nursing Service, sponsored by St. Paul's Trade Unions, sent its first nurse into district work February 1. The funds for the organization were raised by unions in the Trade and Labor Assembly. This is possibly the first nursing service initiated by a labor union.

# Health in Industry and Efficient Production

To Reach the People and Educate Them  
in Means of Prevention is Our Problem

By S. DANA HUBBARD, M.D., SUPERINTENDENT, DIVISION INDUSTRIAL HYGIENE, DEPARTMENT OF HEALTH,  
NEW YORK CITY

**S**TATISTICS regarding health in industry are replete with interesting correlating facts. From the United States Department of Labor we learn that there are about forty million people in this country engaged in industry,—people who work for a living in factories, shops, offices, and mercantile establishments.

Of this army of workmen and women there are about 750,000 who sustain accidents which disable them for a period of more than four weeks' duration annually. There are about 22,500 industrial workers killed each year. There are between 15,000 and 18,000 who suffer permanent disability each year. The economic waste from this source alone means the loss of working time of over 60,000 laborers, or 18,000,000 work days a year.

## Sickness Exacts Toll

Sickness in industry likewise exacts a heavy toll. We are informed from the same source that the average worker loses from illness about nine days a year. This means a loss of one million workers a year, or 360,000,000 days a year, which, estimated at an average daily wage, means a stupendous amount which is lost, when computed in dollars and cents, and much of it is preventable.

Add to this loss, the expenses of sickness, medicines, physicians' and nurses' services, sundry expenses plus the loss of production, and we have an amount which is staggering. There is therefore no greater problem before our country than that of caring properly for those industrially employed. This is further demanded from a public health policy because to reduce death rates we must attack those conditions which are destroying our producers.

A study of a twenty year experience in mortality statistics in New York City shows that, while the general death rate has been reduced from 20.57 per 1,000 population to 12.39—which means a saving of practically eight lives to each one thousand of our population. This has been accomplished from a reduction of child life under five years, which had a rate of 64.6, but is today but 24.7, and in the reduction of infant mortality—children under one year—from 192 to 82—but with it we find the middle aged are more rapidly passing away. It is therefore necessary to take steps to reduce the causes of death of this middle aged group.

Cancer is on the increase; Bright's disease is on the increase; heart disease is on the increase; and these are

the diseases incident to middle life.

To rear a family costs money. To train a workman costs money. Various estimates have been given regarding these two conditions, but what is the use of preparing offspring to take the places of parents when as they are prepared, they are stricken either by accident or illness and taken off? This, therefore, is the theme that is now before us.

In our estimation, much of this industrial sickness is wholly preventable and to reach the people and educate them in means of prevention is our problem. There are many individuals who utterly disregard regulation, but the intelligent and the anxious to learn appreciate that health regulation is the putting into practice something which is of some good to all.

The prevention of accidents and of occupational diseases in a number of industrial establishments has fully demonstrated that many accidents and much sickness can be materially reduced. The use of safety appliances and educational propaganda against these conditions have cost considerable money, but it has been spent in a cause well worth while if one may judge of the results.

Injuries and disease, however, in



Every possible care for the comfort of workers is provided by the manufacturing concern which houses this men's club. It is no mere coincidence that the labor turnover here is the lowest we have observed, proving the value of good environment.

Employees are entertained during lunch hours by music in this very hygienic and attractive eating room. The monotony of their tasks is relieved in other ways. Recreation is provided to effect a proper balance between work and play.

many instances, are contracted while the worker is away from his place of business—in the streets, in places of assembly, in the home, and in recreational places. The fatalities and injuries from automobile accidents are appalling. Disease, especially communicable, is often contracted in these latter places and taken into the shop and there spread to many workers because, either the sufferer was indifferent to the health of others, or else he was uninformed as to the danger and the need of care. Conspicuous in this regard was the epidemic of influenza. Illness of this character is responsible for an enormous wastage of time, money, and health. A broad vision with regard to our public health industrial hygiene program, within and without industry, is needed to approximate health ideals. The unexpected and extraordinary success of the division of industrial hygiene, considering the compara-

given a health foundation that will enable his physique to respond to the demands of the future job, whatever it may be. The physically ill are handicapped and cannot compete with others on an equal basis in industry. Inadequate medical supervision has been responsible for an appalling number of permanently handicapped individuals. Preventive medicine is concerned in the careful study of each individual in order to detect physical defects in their incipency. It is shortsightedness to seek medical aid only when ill. In industry it is shortsightedness to try and operate a plant without medical sanitary supervision.

It is likewise a grave error to hire cheap untrained doctors and nurses, who are already responsible for too many permanently disabled workmen. This statement may be verified by many State Industrial Compensation Boards. Many good medical men and trained nurses are seeking this par-

haps the most wonderful of their architectural creations were the splendid baths handed down by them to modern times. This may have been incident to the propaganda of that period whose record in stone is worthy of passing on to succeeding generations. In the Museum of Art in New York is an elegantly carved solid stone bath tub, probably Agrippa's of Caesar's time (27 B. C.).

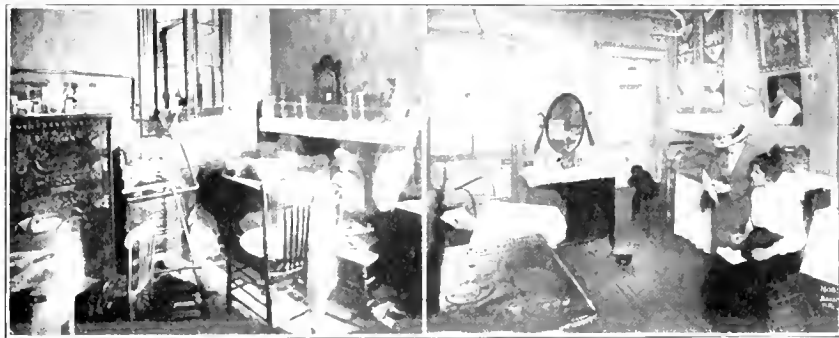
We are informed by our Jewish friends that it was due to the teaching of the Bible that cleanliness in many of the tribes was practiced. Many of the old churches of former times had provision for bathing accommodations for weary pilgrims which carries a suggestion that might not be amiss in some of our modern sanctuaries. The church of today must give its stamp of approval to modern sanitation and aid in this necessary and helpful work. The chief reason for seeking this support is that a doctor, nurse, or public health official may advise methods for maintaining health but unless these opinions are endorsed and facilities afforded for conveniently carrying them into effect the advice is not followed.

There is an economic side to sanitation and this is particularly pertinent when it is applied to industry. Employers must take the lead and those who have already done so have made great progress toward improving working conditions, which has been reflected in better health of the employed with attendant increase in output without additional expense. If we reflect but for a moment, it will be apparent how much workmen are affected in their efficiency by their habits, by their environment as well as by their health.

Architects in designing and erecting modern factories are more appreciative than ever before of the necessity of carefully considering the demands of sanitation in these structures.

### Laws Do Not Govern Habits

The laws regarding sanitation in its various features provides suitable regulations but it is impossible to regulate the habits of people by simply putting regulations on the statute books. It is the experience of the field inspector that human beings, in many instances, rebel against preventive regulations until they know the meaning of these well intentioned statutes. In many instances the builder provides and employer operates clean and sanitary shops but the ignorance, carelessness, and at times



Impossible conditions found in the home of a well paid foreman in whose family sickness had overworked the wife to the neglect of household duties.

In rather unfavorable quarters this housewife, with the aid of the industrial inspector, has arranged neat and sanitary provision of the necessary comfort.

tively short existence of this work, is a most striking example of this need.

Industry is losing many future workmen by neglect of the coming generation, yet much in New York City is being done for the workman and his family. Prenatal clinics and infant welfare clinics have done well, but there is still much that is left undone by lack of appreciation or lack of knowledge of this undertaking. These clinics have demonstrated their need and their remarkable effect is chronicled in the health statistics herein cited. In fact, it might be safely asserted that it is only through these splendid agencies and the cooperation of the public that our death rate of early life can be kept low.

The pre-school child demands medical and nursing consideration because only by proper and adequate care can physical development and muscular training be perfected and the child fitted first, for the school and, second,

ticular field of endeavor but the poor payment offered for this character of service by employers in industry will not elevate the standard of medical service. Prevention therefore consists in being prepared.

### Indifference Imperils Life

The student of industrial sanitation is staggered by the indifference displayed by both worker and employer to many known facts of medicine which imperil the lives and health of those engaged in industrial employment, many of these also are a distinct menace to the health of the home and to public health.

To many, the word "sanitation" may be a new term, but under the term "cleanliness" we can trace sanitation back to the time of Moses, the most perfect code of health laws extant being found in Leviticus.

One of the chief delights of the Romans was bathing and so high did these people regard bathing that per-



contempt of the worker, set at naught the well laid plans.

We are as much concerned with old structures as with the new, because light, heat, fresh air, and toilet facilities may be furnished as required, these are mostly dependent upon the worker for comfortable operation, yet, while windows may be sufficient for affording plenty of fresh wholesome air for proper ventilation, it is not obtained because either some worker is dressed too thin or another may be afraid of taking cold. It is not unusual to find frequent complaints, one workman wants the windows raised and another does not; one raises the windows and another lowers them. How then can proper ventilation be secured?

Similar criticism holds about toilets, rest rooms, and places set apart for lunch or recreational activities. Have you ever visited a factory lunch room after it has just been used by a number of employees? If not, do so and see for yourself these very unpleasant conditions. What is done here is repeated in numberless ways? Public halls, public comfort stations, streets, parks and amusement places afford abundant evidence of the indifference of people generally to neatness, tidiness, and cleanliness. Have you ever lived next to a vacant lot? Have you observed our public parks after a holiday? These furnish abundant and shocking evidence of an utter disregard for public sanitation.

### General Cleanliness

Nothing gives to the eye such a comfortable impression on a visit to a place of employment than the observation that everything is neat, clean, and orderly. Weeds, litter, piles of rubbish, broken fences, and dilapidated weather-beaten structures create a mental impression distinctly opposite to that which is felt when we visit a shop or factory and find the walks well laid out, the grass on the lawn green and well cut, the stocks of different materials stored in orderly fashion, and the buildings and their enclosures kept in the neat, clean and tidy manner that a good housekeeper would keep the home.

Close the eye to the outward appearance and go within, almost instantly it is possible to surmise the character of the business performed. Let the shop show in its best dress. Let the employers interest themselves and the employed will react like the heavy duty engine, which works carefully, accurately and steadily. Are the aisles clear and lighted, day and night? Are the drinking places in

order? Are the stairs clean and safe? If so, one may safely conclude that there is efficient management within and that those industrially employed are making good.

Probably it is a safe assertion to make, that nothing is so generally neglected in factories as general house cleaning. This is unfortunate as it is not only unhealthy but has a direct influence on morale and this in turn on industrial efficiency. Industrial managers that are wide awake are appreciating the economic value resulting from the proper cleaning of a shop or factory. Clean stairways, ceilings, walls, floors, lighting fixtures, windows, and machinery have a distinct economic as well as health value.

Under the broad term of general cleanliness it might be mentioned that nothing is more essential to efficiency of operator and output than fresh air, few things cost less and yet it is diffi-



Ten individuals, all apparently healthy, work in this basement junk shop, which is a distinct menace, both fire and health, to these workers and to the factory above.

cult to obtain uniformly in our homes, shops and factories.

In establishments where dust is created it is most essential to both health and safety that the particles flying about are properly and promptly removed from the atmosphere; in fact, it might be here stated that the prime essential of shop operation is the prevention of the contamination of the breathing air from dust. To obtain efficient operation in any plant careful consideration must be given constantly to good light and pure air. It is specially necessary that the air be free from poisonous vapors and irritating dust.

A most frequent and general offender against the laws of sanitation is defective lighting and improper placed lights. To do good work one must have not only adequate but properly placed lights and these lights must be looked after as domestic care is essential to full light capacity. To make lights efficient

they must be kept clean. Cleanliness and light are interdependent. Dust allowed to collect on glass protectors, on electric light globes, on reflectors together with dirt darkened ceilings reduces most materially the volume of light and by reason of using unnecessarily dimmed lights more current is consumed, because the additional amount of light required is furnished by using a larger number of lights. Reflectors dimmed by dirt cut down the efficiency of lights most materially and it would be but the work of a moment to have the globe and reflector wiped with an ammonia dampened cloth previous to use. The time of the employee taken to do this would more than repay for the time occupied.

Dark, dusty, dirty places of employment have a depressing effect on cheerfulness and very materially lower the morale of the operating staff which directly affects output.

### Keep the Air Clean

Old fashioned dusting and dry sweeping are dangerous, as it scatters the germ laden dirt and contaminates the breathing atmosphere. The proper removal of this dirt and dust may be easily and quickly done with a vacuum cleaner, many of which are finding their way not only into the homes of our people but in our shops. It is important that the dirt collected by this method should not be thrown away but destroyed by promptly burning as in many instances it is germ laden. An instance of the danger of this may be cited in the horse hair industry. Here the raw product—imported horse hair—which is often used to make brushes, is often contaminated with dirt and this dirt is infected with the seed of a most fatal disease, anthrax. A number of workers have contracted this fatal disease in this territory from this source. If the buyers of brushes appreciated this menace, it is easy to conceive what would occur to the brush trade; a buyer's strike, which would not only close shops but throw many persons out of employment. It is therefore most necessary that every factory carefully perform its house cleaning service.

Investigation of many of our places of industry reveals the interesting fact that very many of these are cleaned by the most primitive of house cleaning methods, straw brooms and feather dusters being used, while some shops are cleaned only when the disorder is so acute as actually to interfere with work.

Industry should be up to the minute



and apply methods known to be not only efficient and economical but safe. While we endorse the vacuum cleaner and exhaust system, yet we feel that more important is the efficient removal and disposition of all rubbish, sweepings, garbage, and trash of whatever nature. This is in the interest of health and safety. Fire-proof receptacles should be furnished and used. Employees may be persuaded to use the proper receptacle, only by example, education and careful supervision.

One of the best ways to educate in a large plant is to have a house paper, and a bulletin board at entrances. Interesting personal facts should be placed before the workmen and reiterated in different form repeatedly until nuisances are eliminated.

Visits to many of our factories furnishes evidence that a number of our managers are concerning themselves with the outward and inward appearance of their shops. This is a good sign. On a recent visit to one large establishment which was "spick and span" regarding cleanliness and orderliness, was the following sign printed on each stair riser of the whole seven floors. "Spitting Forbidden. Anyone detected violating this rule will be instantly dismissed." The management informed us that the signs in question had been put on nearly five years previously, that there had not been a single dismissal, and the place was neat and clean with no visible evidence anywhere of any expectoration. Cuspidors are a necessary nuisance in many instances and the presence of these will prevent spitting promiscuously on floors, stairways, and in other places.

### House-Cleaning Methods

The proper cleaning of these articles is often a problem with the management, yet many institutions solve this very easily, by using newspapers and factory waste which are easily destroyed in the furnace. A good method is to have a shallow, wide box, and paper neatly folded with overlaps, like an inverted baker's box placed therein. This protects the box frame, collects the spittal, and is sufficiently large so that however poor may be the marksman he will strike the paper, and never the floor near the cuspidor. When it is considered that nearly one in every seven persons have some form of tuberculosis, and that during the prevalence of respiratory diseases—colds, influenza, bronchitis, etc.—this menace is greater, spittle is a great hazard to

health in factories. The management should never permit one of these utensils to be neglected. Each day the old paper should be collected in a metal container, a fresh one placed in a wooden frame, and the used papers at once burned. To have perfect sanitation and make the place clean and free from promiscuous spitting, cuspidors must be given regular and careful consideration. Other measures that often command attention are of less importance than this as regards industrial sanitation.

### The Talk of Dr. Myerson on Mental Hygiene

"Mental Hygiene as a Factor in Safety and Industrial Relations" was the subject of the address of Dr. Abraham Myerson, professor of neurology, Tufts Medical School, before the Boston Employment Managers' Association, February 12, 1921. He stressed the importance of the study of the individual, no present scientific knowledge guaranteeing an employment manager success in sizing up an individual for placement by any short cut method. He pointed out definite ways in which a psychiatrist can further mental hygiene in industry—both management and men themselves needing psychiatric advice from time to time. General paresis and epilepsy were cited as concrete illustrations of this point.

It is significant that as a result of this address one employment manager present arranged for Dr. Myerson to address his seventy-five employees a month later on "Mental Hygiene." The question period afterwards indicated keen interest in the address on the part of the employees. The first question asked as a joke, "How can one tell in advance if one is marrying an irritable husband?" and answered in similar vein, led to a number of questions of weight, and, though a movement to adjourn was made and seconded, questions continued, no one leaving until all had been answered.

This is the first instance that has come to our attention of an address on "Mental Hygiene" before a group of employees in industry, and employment managers themselves have been audience to but few and these only in the past year. The movement for a mental hygiene of industry is a new one and promises to keep industrialists busy following its progress. A wider application of the principles of mental hygiene to industry will do away with haphazard placement through the scientific ap-

preciation of the relation of the mental level of the worker to his efficiency, of his emotional stability to labor turnover, and of mental fitness and adaptability to unrest.

### Madame Curie, at Work in Her Laboratory

Mme. Marie Curie, the discoverer of radium, is shown in her Paris Laboratory. The discovery of radium, a notable achievement in itself scientifically, marked a point of new departure in scientific inquiry, especially as pertains to cancer research. Madame Curie is now in the United



States. She is being entertained by representative professional people and will be given the opportunity to inspect the various centers of research in the United States. It is expected that she will avail herself of some of the advantages offered in the way of experiment, and that new activities will result from the inspiration of her visit.

### Belgian Exchange Students

The Commission for Relief in Belgium Educational Foundation announces that of twenty-four students at work in American universities, ten are studying medicine. Five came from Brussels, two from Louvain, two from Leige, and one from Ghent. The students are now at Johns Hopkins, California, Harvard, Columbia, University of Pennsylvania, Cornell, Yale, and Stanford. They are specializing in stomatology, neurology, bacteriology, ophthalmology and surgery.

Through an exchange arrangement, forty-eight graduate students, twenty-four from each country, America and Belgium, study in various educational institutions.

## Secretary's Page\*

FRANCIS D. PATTERSON, M.D.

### TENTATIVE PROGRAM

#### American Association of Industrial Physicians and Surgeons

Boston, Mass., June 5 to 7, 1921.

SUNDAY—JUNE 5—4 P. M.

Meeting of Board of Directors at the Copley Plaza. (Guests of Dr. Patterson.)

MONDAY—JUNE 6—9 A. M.

Business session—Amphitheater, Harvard Medical School.

(1) Report of Board of Directors, by Otto P. Geier, M.D., Cincinnati, O.

(2) Report of Secretary-Treasurer, by F. D. Patterson, M.D., Philadelphia, Pa.

(3) Reports of Committees.

(4) Appointment of Nominating Committee.

(5) Appointment of Resolutions Committee.

(6) Appointment of Auditing Committee.

Adjournment for Lunch.

MONDAY—JUNE 6—2 P. M.

Amphitheater, Harvard Medical School.

(1) Presidential Address, by Otto P. Geier, M.D., Cincinnati, O.

(2) Our False Standards of Disability in Industry, by W. Irving Clark, M.D., The Norton Company, Worcester, Mass.

Discussion led by L. R. Daniels, M.D., Hood Rubber Company, Watertown, Mass.

(3) Posture in Its Relation to Industrial Efficiency, by Joel Goldthwait, M.D., Boston, Mass.

(4) The Role of a University in the Development of Industrial Hygiene, by Cecil K. Drinker, M.D., Industrial Hygiene, Harvard Medical School, Boston, Mass.

Discussion led by Dr. F. E. Schubmehl, General Electric Company, West Lynn, Mass., and J. A. Watkins, M.D., The Lukenheimer Company, Cincinnati, O.

MONDAY—JUNE 6—5 P. M.

Smoker (informal) as guests of Division of Industrial Hygiene, Harvard Medical School, Boston, Mass.

MONDAY—JUNE 6—7 P. M.

Banquet of guests of Associated Industries or Employment Managers' Association, Boston.

TUESDAY—JUNE 7—9 A. M.

Amphitheater, Harvard Medical School.

(1) Nurses in the Guise of Industrial Physicians, by W. A. Sawyer, M.D., Eastman Kodak Company, Rochester, N. Y.

Discussion led by J. T. Black, M.D., commissioner of health, State Capitol, Hartford, Conn., and John F. Curran, M.D., The Norton Company, Worcester, Mass.

(2) Study of Industrial Absenteeism, by R. S. Quinby, M.D., Hood

Rubber Company, Watertown, Mass. Discussion by F. L. Rector, M.D., Conference Board of Physicians in Industry, New York; and Edgar Seydenstricker, M.D., United States Public Health Service, Washington, D. C.

(3) Prevention of Infection in Industry, by A. J. Lanza, M.D., Hydraulic Steel Company, Cleveland, O.

Discussion by Wade Wright, M.D., Harvard Medical School, Boston, Mass., and V. A. Paul, M.D., Yale and Towne Manufacturing Company, Stamford, Conn.

(4) Heart Disease and the Ability to Work, by William Egbert Robertson, M.D., Philadelphia, Pa.

Discussion by Alfred Cohn, M.D., Rockefeller Hospital, New York; and Paul D. White, M.D., General Hospital, Boston, Mass.

TUESDAY—JUNE 7—2 P. M.

Amphitheater, Harvard Medical School.

(1) Report of Nominating Committee.

(2) Election of Officers.

(3) Report of Resolutions Committee.

(4) Report of Auditing Committee.

(5) Miscellaneous Business.

Symposium on Community Relations of Industrial Physicians.

Partnership Between the Industrial Physician and the Private Practitioner, by C. C. Burlingame, M.D., Cheney Brothers, South Manchester, Conn.

Relations with the Hospitals, by W. O. Sherman, M.D., Carnegie Steel Company, Pittsburgh.

Relation of Private Practitioners, by Dr. Charles E. Morgan, Somerville, Mass.

Relationship of the Insurance Practitioner, by George Tucker, M.D., Aetna Life Insurance Company, Hartford Conn.

Open Discussion.

C. C. BURLINGAME, M.D.,

Chairman Program Committee.

Announcement is made of an arrangement just made which brings into conference the American Association of Industrial Physicians and Surgeons with the Boston Employment Managers' Association and the Associated Industries of Massachusetts at a dinner and joint session on the evening of Monday, June 6, at the Copley Plaza Hotel, Boston, Mass. Speakers have not been announced, but the general topic of the program will be the attitude of industrial management toward health service and the point of view of the industrial toward industrial management.

Your Secretary is most disappointed over the fact that our membership does not seem to be increasing.

What are you doing to get us the right sort of new members?

Make your plans to come to the Boston meeting and make it the best meeting we ever had.

## New York Industrial Nurses' Club Organize

Through the efforts of Miss Margery Lewis, a graduate of Presbyterian Hospital, the Industrial Nurses Club was organized November, 1920. The organization was completed in February, 1921, when officers were elected and a constitution and by-laws adopted.

The following officers were elected to serve until the next Annual Meeting, May, 1922: president, Mrs. Fred'k J. Brockway, Metropolitan Life Insurance Co., 1 Madison Ave., New York City; vice-president, Miss Elizabeth Burns, Ladew Tannery, Newark, N. J.; secretary, Miss Margery Lewis, C. Kenyon Company, Brooklyn, N. Y.; treasurer, Miss Mary Elderkin, Union Carbide and Carbon Corporation, 30 East 42nd St., New York City.

The Club was organized for the purpose of stimulating interest in the special problems of the industrial nurse and of providing a forum for the discussion of such problems.

## Industry and the Psychopathic Employee

One of the most difficult problems dealing with psychopathic individuals and their social adjustment is their placement in work consistent with their abilities and personal peculiarities. The rehabilitation of the individual may rest upon intelligent help in his vocation, in the finding of employment, as much as upon encouragement in keeping at it. An explanation to the employment manager may be of the greatest assistance. On the other hand, if this explanation is made, the psychopathic employee may be either refused employment, or decided as hopeless at the first manifestation of difficulty. Since such individuals exist in large numbers in industry, there must be some plan created to make proper use of them through training and attention of the psychopathic worker with employment problems.

The Club meets the second Thursday of each month from October to May, inclusive; dues are \$2.00 a year; and the active membership is limited to graduate, registered nurses actively engaged in industry in Greater New York or vicinity. It is a live club, with already about seventy members. For membership blanks and information, apply to Miss Margery Lewis, R.N., Secretary, 1919 Seventh Ave., New York City.

\*Current communications of interest to the membership should be addressed to the Secretary, P. O. Box No. 4061, West Philadelphia Station, Philadelphia, Pa.

# Health and Working Women

THE last *Bulletin* of the Women's Bureau of the United States Department of Labor is entitled the "Physiological Basis for the Shorter Working Day for Women," by Dr. George W. Webster. Dr. Webster was a member of the Illinois Industrial Survey and this report presented by him before the Illinois Women's Legislative Congress in December, 1920, was felt by the Women's Bureau to contain such significant and valuable material that it has been reprinted by them.

Too often we lose sight of the fact that women are physically on a different plane from men, and that certain types of work a woman has no right to attempt, not only for her own sake as a citizen, but also for the sake of her children. Speed, vibration, noise, bad physical conditions as they affect the health of human beings, are community problems. The conservation of national health is much more important than the conservation of forests or coal and, unless health is guarded, not only do we suffer today, but we impose on the future an unjust and inexcusable handicap.

All laws limiting in any way the type of work, the hours of work, or the wages for work for women have been drawn up on the basis that the health of working women must be preserved. To quote from the Minimum Wage Act for the District of Columbia, we find the purposes of the Act defined as:

To protect the women and minors of the District from conditions detrimental to their health and morals, resulting from wages which are inadequate to maintain decent standards of living.

The Act establishes a "Minimum Wage Board" as the machinery for determining

Standards of minimum wages for women in any occupation within the District of Columbia, and what wages are inadequate to supply the necessary cost of living to any such women workers to maintain them in good health and to protect their morals.

On the same grounds, the idea of a shorter working day for women was brought forward. Dr. Webster begins his article with a quotation from Huxley:

Women will be found to be fearfully weighted in the race for life. The duty of man is to see that not a grain is piled upon that load beyond what nature imposes; that injustice is not added to inequality.

Dr. Webster points out that science has a definite service to give to industry if an intelligent solution of industrial

question is sought. A standard to be truly constructive must be a scientific standard, and arguments for shortening the day of working women should be founded on a physiological basis and the fact that "they are women" should be taken fully into consideration. Industry and labor must come to have a correct conception of their relationship to society; a conception which has been proved too seldom recognized if left to contestants in unfettered individual competition.

The shorter workday is proposed in order to lessen fatigue. "Fatigue," says Dr. Webster, "like pain, is one of the great safety valves of the human machine. It is protective. It is a physical defense. Like pain, it warns of and protects against that which is worse than itself. It is a sign that one is going too fast. The human machine is subject to fatigue, the non-living machine is not."

Besides the physical or the mental labor necessary to work, *speed* is one of the chief causes of fatigue. A telephone operator carrying 225 calls per hour, or three and a half per minute, is one example of what speed in industry means. In the needle trades a girl tends a sewing machine carrying twelve needles, making four thousand stitches a minute, or 2,400,000 in ten hours, often working in a bright light and with unshaded eyes, and amidst a noise that can only be described as a deafening roar.

In a pea-canning industry a girl inspects two cans of peas per second, or 72,000 per day. The cappers place the caps on the cans at the rate of sixty to eighty per minute.

In the shoe industry a workman revolves the shoe in such a manner as to trim off the crimped surplus leather from the "upper." His task is 5,200 shoes a day.

In the eyeletting department of the shoe industry an expert worker can finish 2,000 pairs of women's shoes in one day. When it is remembered that each of these shoes has as many as twelve holes irregularly spaced, making 48,000 eyelets per day, a new idea of "speed" in industry is obtained.

Noise, ventilation, temperature, lighting, posture, etc., and other conditions involve the accumulation of fatigue, and the important thing is to measure this fatigue so that we may stop before it is too late.

It is not easy to measure industrial fatigue. In estimating output, the

speed of the machine often determines the output quantity. A superficial observer takes no account of the possible fatigue of the work showing in increased cost of labor turnover, spoiled work, accidents, illness, and ultimate injury to the workers' health. He is tied to the idea that the longer hours, the more work can be accomplished. Output in relation to the fatigue of the worker should be studied, and the estimates of output should then be used to determine the physiological standard for the days worked. In other words, a basis must be found for producing the maximum of output without overfatigue. Dr. Webster quotes from studies comparing the output of an eight and a half hour day with that of a ten hour day.

He claims as a second means of measuring fatigue, the noting of the number and time of occurrence of accidents. He quotes results of a study of Imbert and Mestre of 2,700 accidents among 60,000 workmen in various trades.

The results may be grouped as follows: (1) The number of accidents increases progressively from hour to hour during the first half day; (2) after the fairly long midday rest, in the early hours of the second half day, the number of accidents is notably less than during the last hour of the morning; (3) in the course of the second half of the day the accidents again become progressively more frequent from hour to hour; (4) the number of accidents per hour toward the end of the second half day is notably higher than the corresponding maximum of the morning.

Not only does fatigue decrease output and increase accidents, but its effect upon health is so marked that a third plan of measuring fatigue is by noting these effects upon the health of the average worker.

Workers in dangerous trades who are overfatigued are more readily attacked by occupational diseases. Overfatigue and exhaustion are permanent factors in predisposing to disease or premature death in all industries. A high labor turnover caused by sickness or discontent and an increase in the amount of spoiled work can also be charged to overfatigued workers. "Physical debility follows fatigue. Laxity of moral fiber follows physical debility," he goes on to say.

The Congress of the United States has already established the eight-hour day as the standard in government service for workers employed on government contracts, and the Federal Government is the largest em-

ployer of labor in the United States. "If individuals and firms," says Dr. Webster, "and even states, are so lacking in their social development that they are willing to sacrifice women to industrial advantage, and especially where the states fail, as five of them have utterly failed, to provide any form of protective labor legislation, is unsatisfactory and inadequate, then organized society must take action."

Not only must organized society protect women as workers, at least as much as men, in their inalienable right to the joy of labor, but it must protect itself from any of the evil or sinister effects connected with their labor as women. This is not, and cannot be, purely a personal matter between employer and employee, as the former would try to make us believe.

Owing to the complexity and variation in the character of industry and the strains in it, it is apparent that it is impossible to make a standard of hours for each industry, based on fatigue, but it is possible to have two or three levels or standards of hours, dependent upon the physical and psychological strains of the industry.

Science must be applied not only to immediate economic needs, but also to greater individual and racial resistance to disease, for the quality of our citizens will determine the character of our civilization.

Surely it is not enough that a woman is able to endure the hardship and fatigue of a ten-hour day and not die. Life for a woman should mean more than wage earning, and women should, and do, mean more to our country than mere machines. We should see to it that while engaged in the industries her hours of labor are short enough to enable her to develop into a normal, healthy, valuable member of society.

The sciences of physiology and psychology, the law, the decisions of the courts, the police power of the states, the example of the Congress, the peace conference, the joint interests of both employer and employee, the rights of society expressed in the voice of an enlightened social conscience, all unite in favoring the establishment of the eight-hour day as the maximum which should be required of women in industry. For upon the women depends the vigor of the race, and it must not be exploited for present day purposes instead of for racial conservation.

\*Bulletin No. 15, February, 1921.

## Appointments to Red Cross

The Red Cross *Bulletin* of March 28, 1921, announces the fact that President Harding has appointed Eliott Wadsworth, member of the Central and Executive Committees of the Red Cross, as Assistant Secretary of the Treasury in charge of foreign loans; and W. W. Husband, assistant Service Organization, as Commissioner General of Immigration.

# Housing by Employers

Magnuson\* has made an important investigation of housing by employers in the United States. Employers' or company housing is a term used to describe housing work done by its employers in the interest of their employees. The employers' interest is incidental, not primarily that of a real estate operator or builder, and must be carried on as an integral part of the main business. Company housing is not a new thing. When the colonial manufacturer had located water power for his plant, the undeveloped character of the country forced him to provide housing accommodations for the labor he brought to his establishment. Some of the New England mill towns date back to 1791. The earliest cotton mill community was found in Wilmington, Del., established in 1831, most of the houses of which had been built between the years 1850 and 1860; a South Carolina community was established in 1845; one in Georgia in 1850; and another in 1856. More recent developments have taken place in the iron-mining region of Wisconsin and Minnesota, the coal fields of Ohio and Indiana, and in the western metal-mining regions. During the war the housing shortage became acute and gave rise to considerable building by employers.

The object of the investigation was to study the best and most representative work being done by employers to provide housing accommodations for their employees. Two types of communities, the mining and manufacturing towns, have been covered. This includes the cotton-mill towns of New England and the South, the steel towns of Pennsylvania, Ohio, Alabama, and Minnesota; the bituminous and anthracite coal districts; the copper towns of Northern Michigan, Wisconsin, and Minnesota; coal and iron mining towns in Alabama; the coal and metal mining towns of Colorado and Wyoming and the copper and metal mining districts of Arizona.

The report includes matters which relate to the house, its plan, construction, size, number of rooms, state of repair, sanitary equipment—its adequacy for proper housing. Some attention is given to town planning, street, and lot arrangement; the cost as shown by annual maintenance and repair charges; the methods of conducting the housing works, the rea-

sons for engaging in housing and the results from the point of view of the employer. Two hundred thirteen companies operating 423 different establishments, employing 462,991 men, of whom 160,645, or 34.4 per cent, were occupying company houses, were scheduled in 1916.

## Company Town Communities

The company town is characterized in a way by a tendency to erect houses of similar plan and type; a disregard of the possibilities of architecture, town planning and beautifying through landscape gardening. As a rule, they are not crowded, but are without many such improvements as sewers, water, paved streets, and sidewalks. General community functions, such as street cleaning, lighting, health and sanitary regulations, and policing are in the hands of the controlling company. There is a distinct absence of self-government.

Rents are as a rule moderate. Of 17,643 four-room dwellings, 29.8 per cent rent for less than \$5.00 a month; 39.5 per cent for less than \$6.00; 58.1 per cent for less than \$7.00; and 76.3 per cent for less than \$8.00.

The cost of the semi-detached houses in the Pennsylvania and Virginia mining regions ranges from \$600 to \$800 per dwelling. The same thing in Michigan, 1907, cost \$825. The same detached frame cottage in New England in 1914 cost from \$800 to \$1,000 per dwelling. The four-room miner's frame house in Ohio cost \$600 to \$800, in Colorado in 1914, \$750 each. A cement block house of four rooms in Colorado cost \$650 in 1914. A four-room one-story family house of the ready-built type in Virginia in 1913 cost \$1,500. A four-room, one-family, frame bungalow, neither ceiled nor plastered inside, but having inside sanitary conveniences, erected by companies in Arizona, cost \$1,000.

The cost of housing to the employer is about \$383 per employee house, on a basis of the original cost of houses alone. Reports for eight different coal companies in Pennsylvania show a gross return of 11 per cent on a total inventory value of \$2,855,912. The gross returns vary from a maximum of 20 per cent of certain mining companies in Alabama to 6.2 per cent on houses belonging to given steel companies in Pennsylvania and Ohio. A comprehensive housing policy would standardize the work, keep down costs, and redound to public good.

\*Magnuson, Leifur: Housing by Employers in the United States, Bulletin of the United States Bureau of Labor Statistics, No. 263, 283 pp., Washington, October, 1920.

# INSTITUTIONAL HEALTH

*The Health Problems of Schools and Colleges, Hotels, Summer Camps, Children's Homes and Homes for Dependents*

## The Rooming House and Its Problems\*

Modern Community Life as It Affects  
the Lot of the Submerged Tenth

BY CHARLES V. CRASTER, M.D., HEALTH OFFICER, NEWARK, N. J.

MODERN community life, reacting, as it does, against so many of the accepted precepts of former days, has emphasized ever more clearly the old distinction between those who have and those who haven't.

In few respects is this more evident than in the trend to divide city populations into two distinct classes, the house owner or renter and the ever increasing quota of the community forced by a variety of reasons to live in furnished rooms, with or without board.

### Rooming Groups Vary

This latter class or group, having lost its more or less stationary character, is extremely unstable in composition and is liable to considerable variation in response to social or economic pressure. In a broad way, the roomer or boarder very frequently is recruited from every rank of society, but in the main remains permanently so situated, or is the individual who after a period of stress or misfortune remains in the class for only a certain period of time, becoming sooner or later a person of family either as home owner or house renter. This floating population, floating in the sense of insecurity of home tenure as well as of a liability to change in nearly all its social functions, requires for its housing needs certain well defined accommodations.

In most of the large cities the wants of this class are met in every

conceivable way and with a variety of comfort as well as sanitary conveniences to meet all tastes. This wide range of purchasable accommodations graduates from the palatial hotels of the uptown sections, through the twilight zone of the family hotels and furnished rooms, to the murky atmosphere of the common lodging house and the "flop" room in saloons and charitable institutions.

Comparatively little of the real

rented room or boarding house are essentially of an emergency nature, and we may naturally expect that during a great housing shortage some relief will be found in the increased patronage of these places.

The World War was responsible for the present housing difficulties. So great was the lack of houses and apartments during and after the world war that undoubtedly there must have resulted considerable congestion in some localities in cities, especially in the cheaper quarters.

The worst features of the great housing need were the innumerable instances brought to the attention of the public officials of extreme overcrowding in tenements and apartments as well as in dwellings. It has been urged that health officers were themselves derelict in failing to enforce the sanitary laws against overcrowding and that if such laws had been enforced a solution of the housing problem would have been found somehow.

### Choice Between Two Evils

To this it may be said that the health officers chose the lesser evil of risking the probable bad effects of overcrowding to the very definite hardships to families camping out on streets or vacant lots. It was expected that some measure of this overcrowding must have been reflected in the patronage of rooming houses and boarding places. To ascertain to what degree this was present, and incidentally to check up on the sanitary condition of these places in the city of Newark, a short survey was



Ignorance, poverty, and a home like this make it somewhat hard for the new baby.

floating population is carried by the larger hotels whose clientele is transient, although there are a few small family hotels which specialize in permanent boarders with more or less homelike surroundings.

By far the greater part find accommodation in rooming houses, with a small proportion of a seasonal class finding precarious homes in the common lodging houses of the city. The accommodations, therefore, provided for the shifting population of the

\*Read before the Seventh Annual Conference on Tuberculosis, Lakewood, N. J., October 21, 1920.



What failures in health, what faults of character may find their source in an environment of combined disorder and squalor?



This is the rear elevation of a rooming house. The citizenry can scarcely be expected to rise above living conditions like this.

undertaken during October, 1920. The number of houses let in rooms and boarding houses surveyed was 137. The total number of rooms inspected was 1,997, and the number of boarders or lodgers involved was 1,904. This gives an average of about one person per room, a good margin of accommodation. In these houses there were 135 resident families, and of these twenty-five families were waiting for houses. The number of permanent boarders was placed at 1,540, representing 80 per cent of the total number. The transients so stated were only recorded at 364. In five instances overcrowding to a dangerous degree was reported by the inspectors. Rigid supervision is especially needed in the housing of foreign laborers. A degree of overcrowding was found to prevail in certain rooming houses where newly arrived emigrants were accommodated. No greater menace to life exists than in these foreign boarding houses, in which the apparent object is the imposition of the highest charges for the minimum of comfort or even decency. Conditions were found in such places apparently tolerated without protest which the average American would consider impossible. It is evident that the transient foreign laborer should be protected from the consequences of his own ignorance.

### What Our Survey Showed

The net results of the survey of rooming houses did not show any considerable degree of overcrowding, and we will have to look elsewhere for any definite evidence of overcrowding in the homes of the people.

Although there can be no doubt of the fact that the house shortage has put houses let in lodgings in greatly increased demand, this has been met in the greater number of such houses in most cities. The psychology of the roomer at least demands the privacy of a single room, and only exceptionally will a rooming house owner re-

quire a doubling up as the price of his accommodation.

That extra rooming space was needed was shown by the answer to one question in the survey questionnaire: "Do you require more rooms?" answered in the affirmative by fifty-three out of 137, and in the majority of instances the same owners stated that this need could best be met by ability to make over existing houses into suitable rooming apartments.

Apart from the question of over-



This type of crowded accommodation is none too rare in rooming houses deficient in air space, light, and ventilation.

crowding, the most useful information obtained was upon the sanitary state and accommodations of houses let in rooms. The general type of rooming house lacks sanitary arrangements. The report states that generally the type of house was good, although in the greater number of instances old dwellings were in use for this purpose. Out of 137 such

houses, 84 were built of brick. Although in some ways an old house will provide suitable rooms for lodgers, there are almost insurmountable objections from the sanitary side. In nearly all the houses surveyed sanitary arrangements were described as poor. Baths and toilets were few and invariably insufficient.

### Ventilation and Lighting

With few exceptions was there separate toilet accommodation provided for both sexes and, when this existed, the control was so lax as to defeat any good in the intention of the owner. Lighting and ventilation were occasionally primitive and insufficient. Fire hazards were common and the plumbing inadequate, frequently worn out and poor. In these respects the control of rented rooms is urgent. Not many months ago five Spaniards were suffocated in one room, due to a defective gas jet, and indeed few winter months go by without adding to the list of accidental fatalities from this cause.

As a result of the survey, some interesting light was shed upon the changing character of the roomers in a city. A few years ago a considerable part of our floating population was composed of Germans, Russians, Poles, Italians, and Greeks. The nationality of the 1,904 roomers in the 137 houses as far as ascertainable was as follows: Americans, 1,063; Spanish, 221; Portuguese, 178; Greeks, 62; German, 23; Jewish, 17; Italian, 16; Polish, 12; Irish, 10; Russian, 1; unknown, 301.

One important conclusion emerges as a result of this survey. The sanitary conditions found were so defective that in few instances was there really adequate or modern accommodation for the roomer in the real acceptance of the word, although no rooming or lodging house was found so unsuitable for the purpose as to require active steps to be taken for condemnation. It was evident that in



Burning rubbish found in the back yard of a rooming house. The safety of the whole community is subject to the health and fire hazard here.



The dynamic possibilities of the human mind are great indeed if they can surmount the handicap of an early experience in this type of run down rooming house.



few instances did the lodger have the use of up-to-date and easily accessible modern conveniences. It is evident that the individual seeking lodgings is long suffering and not given to public kicking at the character of the service rendered, which perhaps he looks upon as being a public reflection upon his own circumstances.

There is a very apparent need for the protection of the man who must live in rented rooms, by the adoption of definite rules and regulations to at least assure him of the common decencies of life. At the present time the accommodations offered are subject to the whim of the landlord, usually selfish and frequently profiteering. It is time the community afforded the submerged citizens some measure of protection.

### The Submerged Lodger

Only by law can this long exploited individual be assured of sufficient facilities for bathing and toilet purposes as well as the requirements of elementary cleanliness in the room in which he is obliged to pass a great part of his leisure hours. The necessity for some form of legal supervision is shown by the practice in some boarding houses of allowing beds to be used by day as well as by night without any regard to the requirement of ventilation or airing or of clean linen for each occupant.

The common lodging house, once the haunt of every unnameable sanitary sin, is now kept reasonably clean by city ordinance. The same should be done for houses let in rooms. At least the minimum standard of sanitation compatible with safety is required for the benefit of a class of citizen who is largely inarticulate by reason of the necessity of accepting what is available or suitable to his earning capacity. The results of the survey are crystallized in the following draft of a suggested city ordinance or state law:

### Model Law Suggested

An ordinance to provide for the licensing of rooming houses and for their sanitary condition and to protect the health of the inmates thereof.

*Sec. 1.*—No person, persons, firm or corporation shall conduct any rooming house without first having secured from the Department of Health, a license for that purpose and paying therefor a fee of two dollars (\$2.00).

*Sec. 2.*—Every building in which three or more rooms are rented, commonly known as furnished room houses, for the accommodation of individuals for a single night or longer, such building not being a hotel, shall be termed a rooming house and sub-

ject to the provisions of this ordinance.

*Sec. 3.*—Each and every room rented as furnished rooms shall at all times be adequately ventilated and lighted, and under no circumstances shall there be less than four hundred (400) cubic feet of air space for each occupant of such room.

*Sec. 4.*—Beds which have been occupied at night shall be vacated by 10 a. m., and all bedding thereof shall be turned over and exposed to the air from 11 a. m. to 4 p. m., at which time the windows of the room shall be open to the air. No room shall be rented to two different parties within twenty-four hours.

*Sec. 5.*—All beds, bed clothing, mattresses, and pillows shall be at all times kept clean and free from vermin. Sheets and blankets shall be

mission of the Department of Health.

*Sec. 9.*—The floors of all toilets, bath rooms, and water closets, and all landings, stairs, and hallways shall be made of impervious material and shall be kept scrupulously clean at all times.

*Sec. 10.*—There shall be at all times provided for the use of roomers an adequate supply of water and soap, and a sufficient number of clean individual towels for each person.

*Sec. 11.*—All plumbing equipment in toilets and baths and all gas and electric fixtures throughout the building shall be kept in good repair. In no case shall any gas fixture or stove be connected to the main gas supply other than by a permanent metal pipe. In no case will rubber or other tubing be allowed for gas fixtures.

*Sec. 12.*—Adequate fire exits and



Gypsy family in winter quarters in a rooming house, giving a touch of the East in their personal effects.

provided for each bed. Clean sheets and pillow cases shall be provided at least twice a week, if the bed is regularly occupied by the same individuals. Clean sheets and pillow cases shall be provided for each new occupant of the bed. All blankets must be washed at least four times each year.

*Sec. 6.*—Every rooming house shall be adequately provided with toilet, lavatory and bathing accommodation and, where both sexes are accommodated, there shall be separate toilets and bath rooms for each sex. (At least one toilet shall be provided for every ten persons.)

*Sec. 7.*—The walls, floors, and ceilings of each room, let as a furnished room shall be properly painted or provided with an impervious and cleansible surface, and no dilapidated or broken plaster or decayed wood shall be allowed in such rooms. All rooms shall be kept scrupulously clean and scrubbed and, where vermin are present, disinfection will be required.

*Sec. 8.*—No person shall be allowed to cook food in or use a furnished room as a living room unless by per-

fire escapes will be required in all houses over two stories in height. (At least one exit on each floor for every 50 persons accommodated on that floor.)

*Sec. 13.*—There shall be a central heating plant provided for every rooming house, and in no case will gas heaters be allowed in bedrooms.

*Sec. 14.*—The proprietor of every rooming house shall keep, or cause to be kept, a registry showing the name, former address, and place of employment of each roomer. The Department of Health shall have copies of these regulations printed and the same shall be displayed in every rooming house.

*Sec. 15.*—Any person or persons, firm or corporation, violating any section of this ordinance, upon conviction thereof shall be liable to a penalty of not less than ten dollars (\$10) or more than twenty-five (\$25) dollars for the first offense and a penalty of fifty dollars for each subsequent offense. Any license to conduct a rooming house may be forfeited for any violation of any of the sections of this ordinance or of the Rules and Regulations adopted.

# Infectious Diseases at Summer Resorts

## If Health Habits Lapse at Vacation Time, the Control of Summer Infections Becomes Impossible

BY D. L. RICHARDSON, M.D., SUPERINTENDENT, PROVIDENCE CITY HOSPITAL, PROVIDENCE, R. I.

WHEN summer approaches, city dwellers begin to make plans for their vacations during the hot months. They hope to escape the heat and oppressiveness of the city in the summer. The open country with its fresh air and sunshine, the bathing and out of door sports, appeal to every human being. They are the means of making people vigorous and well.

But enthusiasm should be tempered with judgment for many summer resorts are unsafe for habitation, far less safe than the city. All the good such resorts may do, may be undone by the infectious diseases which often flourish. This is particularly so of intestinal diseases such as typhoid fever, dysentery, and infectious diarrheas. The danger arises from the lack of safe water and milk supply and of the proper disposal of excreta. These dangers are much less among isolated cottagers on the shore of a lake or sea or inland; likewise the danger is slight "back in the woods" where hunters and fishermen go; but constitute a very great menace to large cottage colonies, many of which are crowded.

The first question a person should ask before deciding on a place to spend a vacation is whether proper measures are taken to protect the resort against infectious diseases, emphasizing particularly the inquiry into the character of the water and milk supply and into the manner in which excreta are protected and disposed of.

A physician should also be within calling distance of such places, for infectious disease may need prompt diagnosis and isolation, a fact which should be considered, especially when the vacation is for the whole summer and there are children in the family.

### Eliminate Typhoid Danger

All vacationists should receive typhoid vaccine before leaving for summer vacations. The vaccine is a solution of dead bacilli and in it should be included typhoid bacilli, together with both alpha and beta paratyphoid organisms. Three doses are required, each given at weekly intervals. The vaccine should be fresh

and obtained from a reliable source. The immunity lasts for at least two or three years and may last much longer. The United States Army gives only two series of injections, the first at the time of the first enlistment and the second at the time of the first re-enlistment, three years later.

Summer resorts vary in character and size and to some degree such variations must find a parallel in the suggestions for preventing infectious disease. Some of the more expensive resorts are in reality cities, provided with all the conveniences of a city. The resorts which fall into this category, however, are not numerous. Generally speaking, summer places constitute groups of frame houses not provided with piped water supply or flush toilets, and they closely resemble in their sanitary provisions the character of farms and small town residences. Combined with these, and occasionally in a separate location, are tent colonies. The recommendations in this communication apply to resorts of the last two mentioned kinds, for nothing need be said of the summer colonies which are really small cities.

The function of inspecting and laying down rules of sanitation of summer resorts should reside in the state boards of health. It is their duty particularly to safeguard the milk and water supply and to see that excreta are properly disposed of. In case of an outbreak of infectious disease, then State Board officials should take the problem in hand and insist on proper measures, unless perchance the resort fall within the jurisdiction of a city health department.

Usually the water supply is from wells. It is safest that these be artesian wells and they should not be situated near a privy. They should be well curbed so that pumped water will not run back into them, and no common drinking cup should be allowed at the pump. If water is taken from a lake or river on which are situated habitations, investigation should determine whether excreta are carelessly disposed of, making possible the pollution of the water supply. For campers in the woods the

danger from such a supply is very remote unless there are other camps above. It is not bad tasting water that is dangerous, but water contaminated with human excreta. Boiling drinking water is the safest procedure when any doubt exists about its character.

### Standards That Safeguard

Privies should be outbuildings, and not attached to the house. They should be placed as far as possible from the well, and at a lower level. Road dust, sand, or loam should be sprinkled into the vault at least once a day. Chlorid of lime is of some value as a disinfectant and deodorizer. The vault should be at least four feet deep. It should be tight enough to keep out flies and should not be allowed to overflow, but be cleaned out once or twice a year. The window should be screened, and it is best to have the door screened, although if the latter is kept constantly closed screening may not be necessary. There are on the market chemical closets which have been quite generally used in the South and found to be efficient and practicable. They consist of tight metal tanks in which is placed a disinfecting solution into which excreta fall. The solutions recommended are lye and chromate of soda. These tanks are so arranged that they can be easily emptied and new chemical solution is then added. The cost is moderate. After defecation and urination the hands should be washed.

The milk supply is usually derived from neighboring farms. The cow stables should be kept clean and the milking done in a clean manner and by healthy people only. It should be cooled at once and, when received at the cottage, should be kept on ice or in a refrigerator. The importance of a safe milk supply cannot be too much emphasized, for babies and small children are often numerous in summer resorts; furthermore, the sojourn at the resort is during the time of the year when babies and children are most prone to intestinal infection.

It is often difficult to make sur- of a safe milk supply. Unless the

farms are under good supervision by the state board of health, cottagers have little authority to insist on proper rules. Moreover, the ice supply and refrigerators are not always what they are in the city. It is probably safer to boil all milk intended for feeding the babies.

If garbage is not regularly collected at the resort it is best to dig a hole in the ground in the back yard some two feet deep and four or five feet square. After each meal the swill is to be emptied into it and enough dirt thrown in to cover it, the pit being extended as needed.

Waste from the sink and other soiled water should be thrown into a stone pit. This pit should be beside the cottage so that the sink pipe may empty into it. It should be dug about

three feet in diameter and four feet deep and filled with round stones. The water will leach away rapidly and a bad smelling and wet spot avoided.

The cottages should be screened with cloth or wire netting, at least eighteen mesh screening used. Such netting will keep out mosquitoes as well as flies. This has an important bearing upon the comfort of the vacationists, and in malaria districts will help to prevent that disease, for the *Anopheles* mosquito is chiefly a night flying insect.

If an infectious disease develops, it is not often wise to attempt to care for the patient in such temporary surroundings. Usually the cottage is crowded and the facilities for caring for the sick rather meager. The patient should be taken home or to a

hospital. It is important that infectious disease be recognized promptly, for the time which is frequently lost may result disastrously in such diseases as diphtheria and epidemic meningitis. Safety demands that a physician always be called promptly in all acute illness of children.

In the event of infection all the members of the family, and other contacts of the patients should be examined for the detection of carriers, mild overlooked cases or frank exhibitions of the same disease. The same methods of control, in a word, should be followed as in town or city, except that the sick should not be treated in the cottage. In case of an outbreak of any infectious disease the state or nearest city board of health should be notified at once.

## Health Matters Concerning the Summer Camp

BY CAPTAIN F. L. BEALS, U. S. A., CHICAGO, ILLINOIS

THE summer camp is the logical outgrowth of an inherent gypsy trait which leads everybody to love the fun of camping out. The nomadic, care free existence of the camper, who goes from one place to another, setting up his tent and building his campfire at a new spot each evening, is a lure that brings thousands to the open country and has made of Americans, in general, a nation of campers out at certain periods of the year.

The moving camp has its drawbacks, however, and the runabout vacation has come to be displaced by the vacation encampment at some spot chosen for its climate, its scenery, or its proximity to some interesting location.

Up to within recent years, the site of the camp has been the chief attraction. Whether by lake or river, in the spreading forest or the open country, the site of the camp has been chosen because of its natural surroundings and its beauty, without particular regard to the healthfulness advantages of the location. Fortunately, it is usually the case that any well selected outdoor location is normally a healthful spot, but even the high ratio of hit-or-miss healthfulness does not preclude the possibility of trouble. Infected water supply, bad drainage or improper sewage disposal may turn a beauty spot into a plague spot.

Inasmuch as the furtherance of health is one of the prime reasons

for the summer camp, it is well worth while to place emphasis upon the health conditions surrounding the camp. Nothing should be left to chance that can be ascertained by research in advance. Healthfulness of surroundings should be considered a more essential quality in the selection

the commanding officer and chief executive.

Camp Roosevelt is located five miles from Muskegon, Mich., which is a night's ride by steamer from Chicago. The choice of the site of Camp Roosevelt was not made in a desultory fashion. Our committee went over several possible sites, all of them almost equally picturesque in appearance, and finally settled on the present location, which is at least partially shown in the accompanying illustrations. The decision rested, in the final analysis, upon the fact that the present site has all essential health advantages.

Through the cooperation of the city health department of Muskegon and the city health department of Chicago, a complete survey of the grounds and surrounding country was made by experts before the camp site was formally chosen. This survey included not only the immediate site, but the surrounding country. We wanted to be absolutely certain about such things as water supply, bathing facilities, drainage, sewage disposal, freedom from mosquitoes, and the like before bringing a thousand boys into camp for a summer of recreation, health training, and education.

One of the requisites of a healthy camp is the right kind of soil. At Camp Roosevelt, the soil is sandy and no stagnant water ever collects. This condition of the soil also makes the sewage disposal easy, because the ordinary open latrine can be used



Captain F. L. Beals, U. S. A., Commandant of Camp Roosevelt.

of a camp site than the mere picturesque quality of any given location.

As a case in point, I might explain our experience in choosing a site for Camp Roosevelt, the summer camp which the Chicago Board of Education has chosen for its school boys and of which I have the honor to be



The daily program at camp includes military instruction. Here the camp paraphernalia are being given an airing.

without any of the usual dangers or disadvantages. The sandy soil, which dries quickly even after a heavy rain, eliminates the necessity of floors in the tents, except in semi-permanent buildings.

Next after considering the type of soil, we went into the matter of water supply. Spurning the opportunity of securing a supply from the open lake, we obtained a full supply from an artesian well some six hundred feet deep and with no chance of surface contamination. Shallow wells are used to supplement this supply, the water, however, being subjected to chemical tests at least once a week. The importance of a wholesome water supply is not debatable, yet many summer camps are located without any preliminary investigation as to the character and purity of the water.

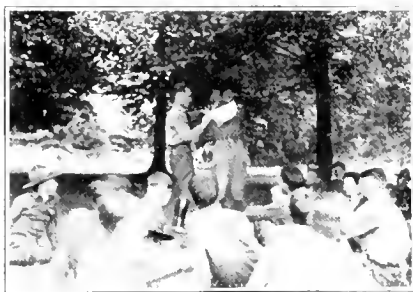
Next in order of importance in planning a camp would probably be the equipment. Luckily, Camp Roosevelt is provided by the war department with standard military equipment.

### Simplicity Essential

Our boys are quartered in the large pyramidal army tents, without flooring and well ventilated. Army cots and blankets are also supplied and the boys bring their own clothing and toilet articles, all of which are inspected by the company officers at least once a week. In this connection, it might be said that the chief insistence in the matter of equipment should be for simplicity of arrangements. Elaborate bedding, superfluous blankets, excess toilet facilities, and all other unnecessary impedimenta of camp life should be eliminated.

Food is a matter of prime importance, both as to its source and its

handling. At Camp Roosevelt we have spent a great deal of time and energy in perfecting a plan to supply our mess halls with good, whole-



Each of the boys enrolled is given a thorough course in first aid. When he has successfully completed this work he is given a first aid certificate for the work accomplished.

some well cooked food of unquestioned purity. Kitchens and mess halls are semi-permanent in construction, with sidewalls, screen doors and windows, and proper ventilation. These build-

ings are at some little distance from the living quarters of the camp and are thus free from a possible source of contamination.

The storing of food in the average summer camp presents a serious problem. In our case, this has been solved by keeping the perishable foods in a refrigeration plant in the city of Muskegon and supplying the camp through motor delivery twice daily. The milk question—always a potential source of disease—we solved by deciding in favor of canned milk, rather than risk the possible sources of infection through a fresh supply.

Too much attention cannot be given to the camp menu. It is the honest presumption of a great many people that the human stomach assumes the attribute of an ostrich's stomach, once the owner goes on a camping trip. This is not the case, and the menu must be planned accordingly. Simple, wholesome, well cooked food in sufficient quantity to satisfy the normal appetite, but not enough to permit gluttony—that is the rule at Camp Roosevelt.

Next to food in importance, comes the matter of exercise. And it should be remarked at this point that careful supervision of exercise is one of the important steps in the ideal summer camp. Boys, in particular, are apt to overdo and they must be watched.

At Camp Roosevelt, the boys are under the supervision of physical directors from the Chicago schools, who see that they do not overtax their strength. Good games of all kinds, military drill, recreative pastimes, and the like are encouraged. A daily swim in the lake is a part of the routine, but care is exercised to



The well selected location of the Camp adjoins Lake Michigan. The swimming lessons are occasions of great sport.

prevent too much activity. Opportunities for rest punctuate the day's program, so that nightfall finds the boys ready for a sound sleep, but not too tired to sit for a half an hour or so for an evening lecture, the moving picture, or the entertainment which is a feature of the life at Camp Roosevelt.

### Health Schedule Elaborate

We have been able to maintain at Muskegon a somewhat more elaborate health schedule than is possible in smaller camps, but the principle of caution can be observed anywhere. Boys coming into the camp are given an examination as to their physical fitness and possible breakdown under the camp routine. A hospital tent is the first tent to be put up at the camp each year, and it is kept in immediate readiness for first aid cases, while arrangements are made with a Muskegon hospital to handle anything approaching a serious condition. The Chicago first aid chapter of the Red Cross maintains three physicians and a nurse at the camp at all times to take care of any emergencies.

Luckily, however, we have had very little actual need for our hospital and its staff. The general health rules, which are fully observed, preclude any serious difficulties, and about the most dangerous troubles brought to our attention are sunburn, blistered feet, and other minor afflictions of camp life. As far as that goes, we have a weekly foot inspection to prevent any serious foot trouble or infection.

One other point, and one which has a bearing on the health of the camp, is the matter of morale. The healthy camp must have a healthy moral tone, and this is again particularly true with reference to a camp for boys. This part of our work is safely entrusted to a corps of nine or ten Y. M. C. A. secretaries who are on duty in the Y. M. C. A. hut, which is a permanent part of the camp. These secretaries supply speakers, music, moving pictures, stationery, books, laundry service and the like—all helpful forms of service which go to make camp life more enjoyable and certainly more wholesome.

That there is an earnest public response to the efforts we put forth in arranging what has been termed "a model summer encampment" is proved by the growing success of Camp Roosevelt. Established originally as a camp for the boys of the Chicago high schools, it has grown into almost a national institution, with boys



The pleasure of roughing it, wholesome companionship under wholly democratic conditions obtain in the five mess halls at Camp Roosevelt.

from many states on the camp rolls each summer. This year's camp, which will begin July 3 and continue until August 27, promises to be bigger than ever, for enrollments are already reaching my office.

The success of the camp is due in some measure to the economy of it, for only a nominal charge is made

for the bed and board of the cadets who enter, but the greatest credit for the progress of the camp must be attributed to the fact that boys and their parents know that Camp Roosevelt is a healthful, joyous, beneficial summer vacation spot for building better boys through intelligent direction of normal play activities.

## Student Health Service Survey

BY WILLIAM P. EDMUNDS, M.D., UNIVERSITY HEALTH SERVICE,  
ANN ARBOR, MICHIGAN

THE object of all student health organizations is to care for the sick, prevent disease, and provide proper health instruction, but there is a wide variation in the methods used and success attained by the different schools. The American Student Health Association sent a questionnaire to the large universities and colleges of this country regarding student health work for the year 1919-1920. Forty schools reported that they have definite organizations to coordinate their student health work, and their replies were grouped together and tabulated with the results shown in the following tables:

### Name of Organization

Department of Hygiene.....	10
Department of Student Health....	5
University Health Service.....	5
Department of Physical Education..	2
Medical Department .....	2
Department of University Health..	2
College Health Service.....	2
School of Hygiene.....	1
Dept. of Hygiene and Student Health .....	1
School of Physical Education.....	1

Medical Director .....	1
Unanswered .....	8

### How the Work Is Financed

By the University.....	12
By Student fee.....	12
By Student fee and University....	7
By University and International Social Hygiene Board.....	5
By University, International Social Hygiene Board and Student fee..	1
Unanswered .....	3
Largest student fee...\$10.00 annually	
Smallest student fee.. 4.50 "	
Average student fee.. 6.23 "	

The budgets reported for the year averaged \$5.26 per student, being approximately divided three-fifths for salaries and two-fifths for current expenses.

### Medical Staff Personnel

Full time physicians.....	36	Schools
Part time physicians only..	4	"
Women physicians .....	13	"
Nurses .....	32	"

Minnesota differs from other schools in having one full time physician as director, and eight part time fellowships paying six hundred dollars each,



thus providing a number of specialties without excessive cost.

### Dispensary Service Supplied

Thirty-four schools have dispensaries. The hours the dispensaries are open average three hours of one physician's time per one thousand students. Those supported entirely by student fee usually provide physician's service and drugs without charge, while the others ordinarily charge for drugs and in some cases for physician's service also.

Sick calls made at students' rooms.32  
No charges made for such calls...22  
Charging regular physician's fees.. 5  
Charging \$1.00 for all calls..... 3  
Charging \$1.00 for day calls and \$2.00 for night calls..... 2

The schools which charge for the room calls do so with the purpose of reducing the number of such calls upon students who could just as well call at the dispensary.

### Hospital Care Provided

Thirty-two schools have hospitals and the others have arrangements with city hospitals to care for their students.

	Average No.
Patients per 1000 students during the year .....	266.0
Patients per 1000 students per day .....	3.6
Days in bed per patients.....	5.7
Influenza patients per 1000 students .....	70.0
Pneumonia patients per 1000 students .....	4.1
Deaths per 1000 students.....	0.6
Average cost per day per student .....	\$3.44

### Medical Examinations

Medical examination of	
All students once each year....	5
First and second year students once each year.....	2
All entering students.....	32
No examinations made.....	1
Examination consists of complete medical examination in.....	33
Examination consists of merely physical measurements in.....	6
Medical examinations are made a prerequisite to entrance in.....	7
Students with physical defects are required to report for subsequent examination in .....	21

### Instruction Required

No required work.....	11
All first year students required to attend a few health lectures in...	9
All first year students required to take a one semester course in Hygiene .....	6
All first year students required to take a two semester course in Hygiene .....	13
All students required to pass four semesters work in Hygiene.....	1
Practically all schools give elective courses.	

### Living Conditions

Good control over the living conditions of their students—

Good in .....	5
Slight in .....	15
None in .....	20

### Physical Education

Work in Physical Education required:  
None ..... 1 || One year ..... | 5 |
Two years .....	20
Three years .....	1
Four years.....	6
Average amount required 2.18 years.	
Twenty-four schools give credit for the work.	

In nine schools Student Health work and Physical Education are under one head.

### Miscellaneous Provisions

Vaccination against smallpox required in ..... 13 || Typhoid immunization required in.. | 3 |
| Twenty-three schools have swimming pools and there are almost twenty-three different methods of caring for them. |  |

In nomenclature of diseases six schools use Bellevue; five use U. S. P. H. S.; and five use International Lists Causes of Death.

The replies from forty other schools which do not have definite organizations to coordinate their student health work were tabulated and the comparison of the two groups is shown below, the first column showing those having health organizations, the second those without such departments.

	No Organ-Organ-izations ization
Full time physician on staff .....	36 2
Part time physician on staff .....	4 18
Woman physician on staff.....	13 1
Nurse .....	32 18
Complete medical exam. of entering students....	33 20
Examination prerequisite for entrance .....	7 1
Subsequent examinations of defectives made.....	21 11
Attendance at a few health lectures required .....	9 8
Passing one semester's work in course in Hygiene .....	6 5
Passing two semesters' work in course in Hygiene .....	13 2
Control over living conditions of students:	
Good .....	5 0
Moderate .....	15 10
None .....	20 30
Average years of Physical Education required 2.18	2.36
Smallpox vaccination required .....	13 4
Typhoid immunization required .....	3 0

### Conclusions Reached

(1) Every university needs a definite organization to coordinate its stu-

dent health work. This is clearly shown by the comparison of the schools having such an organization with those not having.

(2) Student health work should be systematized. The need of this is seen in the varieties of names used to designate the organization at different schools, the several systems of disease nomenclature used, the many methods of purifying swimming pools, the lack of uniformity in the cards used for medical examinations, etc. The American Student Health Association will probably do much to clarify this phase of the work during the coming year.

(3) The sick are in general well provided for.

(4) There is great need of more follow up work with the medical examinations.

(5) There is a great lack of sufficient instruction in hygiene and sanitation. The minimum requirement should be a two hour course for one semester.

(6) There is practically no control over the living conditions of students.

All Student Health Services were probably forced to gain admittance into university life through the care of the sick, but, once established, the main work should be the prevention of disease and proper education of the student body in hygiene and sanitation.

### Aid for Rural Diagnostic Clinics

Dr. Victor C. Vaughan, writing in the *Journal of the American Medical Association*, April 9, 1921, points out the fact that every legally qualified physician in the United States so far as possible should have at his service all the scientific conveniences to facilitate correct diagnosis. Every rural community should have the authority to build, equip, and maintain a community hospital, just as tuberculosis hospitals are built, receiving possibly the same support from state funds. The hospitals would have libraries and laboratories, where preventive and curative medicine could be combined. This use of the hospital would enable the rural practitioner to follow more closely the recent developments in medicine.

### Symposium on Health Centers

The *American Journal of Public Health*, March, 1921, contains a symposium on the health center, giving the historical development, present status, and need for the different types.



# The Hospital Library and Service Bureau\*

By DONELDA R. HAMLIN, DIRECTOR, CHICAGO, ILLINOIS.

THE Hospital Library and Service Bureau was organized by the American Conference on Hospital Service to act as a clearing house for matters of interest to those active in the hospital and public health fields. Until its establishment there had been no centralization of hospital literature in this country, no complete subject index covering current or past writings on hospital topics (aside from those made in a small way for individual use), and no extensive collection of plans, specifications, lists of equipment, and analyses based on actual operation of institutions of a type such as would be helpful to individuals, communities, and public officials responsible for the development of new hospitals, dispensaries, health centers, and allied institutions.

The Hospital Library and Service Bureau is cooperative in every essential, not only its success but its very existence being dependent upon the cooperation of those active in the field it serves. It is a central repository wherein information is so arranged and tabulated as to be made available for the use of those engaged in building, equipping, and operating hospitals, sanatoriums, dispensaries, health centers, and allied institutions.

While the Hospital Library and Service Bureau is under the direct guidance of the Conference, its immediate establishment was made possible by the financial support of national hospital, surgical, medical, and social service organizations, aided by the Rockefeller Foundation. Among the organizations which have so far contributed to the support of the Library are: The National Catholic Welfare Council, the American Association of Hospital Workers, the American Association of Industrial Physicians and Surgeons, the American Medical Association, the American Hospital Association, and the Modern Hospital Publishing Company. The American Dietetic Association has also pledged its support. While it should be understood that the Library and Service Bureau serves, gratuitously, individuals having a legitimate interest in any phase of the work which comes within its scope, it is felt that public recognition should here be given to the organizations which have aided in the establishment of this service.

The policy adopted by the Library Committee precludes the giving of advice by the personnel of the library, it being the purpose of the organization to collect and disseminate information from which the persons using the library may make their own deductions.

Particular stress is placed upon the value of our service to the small hospitals who have not ready access to reference libraries and other sources of information. Our work with these institutions, particularly those in rural communities, will have to be carried on by correspondence. Since considerably over half the institutions of the United States are of less than fifty bed capacity, some idea may be had of the extent of this field.

## Material to Be Collected

Perhaps the most important feature of the work done by the Hospital Library and Service Bureau during the first few months of its existence has been the "Outline of Material to be Collected." This outline, which has been printed in the various hospital, public health, nursing, and allied journals, gives a definite idea of the type of material which will eventually be available for reference purposes. A copy of the outline will also be sent to the superintendent of each hospital, sanatorium, and allied institution in the United States and Canada, so that the personnel of these institutions may have definite knowledge of the material being collected for their use. Additional material suited to individual needs will also be collected upon request.

Building committees and committees organized for the promotion of hospital projects will be especially interested in a list, recently compiled, of approximately sixteen hundred architects serving the institutional field. This list has been made in duplicate, one copy being arranged alphabetically, the other geographically, to facilitate locating the address of any given architect, or information regarding the architects in any given community. The card list also contains information in regard to the various institutions served by each of these architects. This information is now being verified and will soon be available for general reference purposes.

Floor plans of hospitals, sanatori-

ums and nurses' homes, with photographs of exteriors and interiors, are now being received for the permanent exhibit of plans which will be maintained at the library. From this exhibit special exhibits will be prepared for national association meetings, from time to time. Floor plans will not be sent out of the Library except in the case of special exhibits at national association meetings when they will be in the care of a representative of the Library.

A valuable list which is now available in the library is a list of hospitals, sanatoriums and allied institutions of the United States, arranged according to type of service. This list has been classified by type of service rendered so that information is readily accessible as to the number and location of institutions of any given type. The list of approximately nine thousand institutions will be corrected and amplified from time to time. A similar list giving information in regard to the location and service rendered by dispensaries in various parts of the country is now in process of compilation. This will include industrial dispensaries and health centers, such as the health centers being established by the American Red Cross.

The library has on file a list of all the technical and professional journals which would be of interest to those engaged in hospital and public health work. Eventually current files of such magazines will be maintained in the Library.

Hospital reports, reports of special departments, and samples of records used in hospitals and dispensaries are being assembled. From these it will be possible to compile very valuable statistics and tabulations on the different phases of hospital activities.

A number of interesting and authoritative books have recently been added to the library, a great many of which are autographed copies contributed by the authors.

To encourage frequent conferences among hospital workers, through the formation of local associations, the Library has been placed at the disposal of such associations. The Chicago Dietetic Association meets monthly in the Library and regular meetings of the Chicago Society of Anesthetics will be held there beginning this month.

\*Read before the American Conference on Hospital Service, Chicago, March 9, 1921.

A list of hospitals opened during the past year is now being made. From these lists of original equipment will be secured with an expression from the superintendent as to the adequacy of the material selected.

A tentative arrangement for the procurement of information on the laws affecting hospitals of all states, has been made for submission to the Library Committee. It is hoped that within the near future a definite arrangement may be made so that such information may be available for our clientele.

Information from national associations dealing with the various phases of hospital, public health, child welfare, social service, nursing, dietetic, medical and surgical work is now available. This information includes the purpose and scope of the associations, the personnel, time and place of meeting, requirements for admission, reports, and transactions. Close contact will be maintained with these organizations that their work may not be duplicated and that information in their files may be available for those using the library.

A card file is now being made of all institutions giving special courses in social service, public health, anesthesia, nursing, occupational therapy, physiotherapy, laboratory technic, and dietetics.

While every effort is being made to collect, as rapidly as possible, material for the Library and Service Bureau, it will be some time before all the material referred to in the outline is assembled. Despite this fact, inquiries are invited on any subject of interest to the hospital field. If the material desired is not immediately available, every effort will be made to secure it as promptly as possible.

#### Brief Statement of Purpose

The Hospital Library and Service Bureau is under the direction and is an important part of the American Conference on Hospital Service.

It belongs to the constituent members of the Conference.

It was established to act as a clearing house on all phases of hospital and public health work.

It will serve all persons actively engaged in such work; for instance, it will serve not only the superintendent of the hospital but the superintendent of the training school, the dietitian, the social service worker, and the heads of similar departments.

Its service is free. The more it is used the more valuable it will become through material collected to answer inquiries.

It does not give advice. That aid may be given in solving the problems of administration which may arise, the Library will endeavor to learn how other hospitals have met such problems, and the information thus secured will be transmitted to the person making the inquiry.

Members of the Conference are invited to study the "Outline of Material to be Collected," copies of which are supplied upon request, and to send suggestions for amplification of the Outline to meet individual needs. The outline in its present form is merely a chart of material to which it is proposed to add from time to time.

#### Relief Associations Among Government Employees

Eighty organizations which maintain funds for the purpose of furnishing financial assistance to members in case of sickness or death were included in a study reported in *Bulletin* No. 282, Bureau of Labor Statistics. Fifty of these paid sick benefits only, fourteen death benefits only, and sixteen on the basis of sick benefit societies pay sick and death benefits. Twenty-eight operate in the Navy Yard, twenty-three in the Government printing office, and one each in twelve other departments, offices, and

bureaus. The membership covered 23,171 men and women, with the total receipts of \$256,013.92, while the seventy-seven societies reporting paid \$1,132,320.05 in sick and death benefits. All but two paying sick benefits distribute their surplus funds at the end of each year to members who have not drawn sick benefits of the sixty-six paying such dividends; sixty-one disbursed \$77,681.91. Fifty associations provided relief in sickness only. Forty-six reported total receipts of \$100,296.16, over 96 per cent of which was paid to members either as sick benefits during the year (\$46,289.62) or as dividends at the end of the year, \$50,129.43.

The amount of sick benefit ranges from four to thirty dollars per week for from four to ten weeks, with a waiting period of from one week to six to twelve working days. No sick benefit is paid for less than one week. The largest amount of relief possible from a single membership is \$192 for the association year. The death benefit varied from \$50 to \$300. After the first week of sickness—two weeks in a few associations—sick benefits are paid weekly, while the beneficiaries in case of death benefits often receive the amount due them within a few hours after the death of the member.

#### Prominent Physicians Visit the President



A number of prominent physicians were recent guests at a luncheon with President Harding at the White House. This photograph shows the guests leaving. They are from left to right: Surgeon General H. S. Cumming, U. S. A.; Dr. Charles Mayo of Rochester, Minn.; Dr. C. E. Sawyer, the President's physician; Dr. W. F. Snow; Rear Admiral E. R. Stitt, Surgeon General of the Navy; Dr. Edward Martin, commissioner of health for Pennsylvania; and Surgeon General M. W. Ireland, U. S. A.

# THE NATION'S HEALTH

(Continuing MODERN MEDICINE)

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Number 6

## Public Health Problems in Europe Accentuated

The Post-War Health Movement Has Made  
Geneva the Health Center of all the World

BY C.-E. A. WINSLOW, M.D., GENERAL MEDICAL DIRECTOR, THE LEAGUE OF RED CROSS SOCIETIES, GENEVA, SWITZERLAND

IT MIGHT seem that a definite advance along public health lines would be impossible in battle-scarred Europe at the present time; and the difficulties in the path of progress are indeed very great. With the reparations question at an impasse, with Russia still practically isolated, with Austria and Hungary economically crippled, and with the terrible loss of life and property in every belligerent country, it requires courage to plan constructively for the future.

In the public health field, the menace of extensive post-war pestilence has so far been held in check. Typhus is still a grave problem in Poland and Russia and the case fatality rate this spring has been abnormally high. Nevertheless, we believe that this disease is in general under control, and well informed experts are directing their attention towards cholera, which is already prevalent in certain sections of eastern Europe as the most critical epidemic menace of the summer. The great public health problems of infant mortality and tuberculosis, which form the major task of public health in normal times, are, however, enormously accentuated at the present moment, and constitute the most outstanding challenge to the health administrator.

In Vienna, for example, the tuberculosis death rate for infants under one year of age was 608 per 100,000 in 1919, which was not far from the

normal figure before the war. Between the ages of one and four years, however, the rate has risen from 437 in 1913, to 679 in 1919. Between five and nine years it has risen in the same six year period from 138 to 286, and between ten and fourteen years from 92 to 194. Mr. Knud Stouman estimates that in the eleven newly formed countries of central Europe the tuberculosis death rate for all ages ranges between 300 and 600 per 100,000, which corresponds to some 400,000 deaths per year.

In spite, however, of these tremendous handicaps of post-war disorganization, a survey of the whole field indicates that the public health program as a whole is making real progress in Europe and that in the next five years we may look for a more general and vigorous campaign against disease than has ever been waged before.

In England the Ministry of Health is carrying out Sir George Newman's admirable plans of constructive health development along broadly conceived social lines. The infant welfare work which was so stimulated during the war has brought down the infant mortality rate for England and Wales to 80 deaths under one year per thousand living births for 1920, as against 89 for the previous year and 108 for 1913. Campaigns against tuberculosis and venereal disease are also being developed with remarkable effectiveness, and alto-

gether England is probably leading the world in public health activities at the present moment.

In France, there is unusually active interest in child welfare work, and Americans may be proud of the splendid organization developed by the Rockefeller Foundation under Dr. Linsly Williams, which is extending its field to include not only tuberculosis, but also a far reaching plan of propaganda in regard to the wider problems of general public health.

In Italy there are interesting reactions between the public health campaign and the labor movement which promise much for the progress of industrial hygiene and which have recently crystallized in the establishment of an institute of public health with vast plans for coordinating and developing public health propaganda under the leadership of Professor Etteore Levi.

### The Movement Widens

The stirring of the impulse toward a widening and deepening public health movement is by no means confined to the larger countries. In Czecho-Slovakia the Ministry of Health, under Dr. Prochaska, and the Czecho-Slovakian Red Cross under Miss Alice Masaryk, are both developing the keenest interest in the possibilities of "the new public health." Professor S. M. Gunn is in Prague representing the Rockefeller Foundation as a special health adviser to the

government; a mission of eminent health experts has just returned from an inspection trip to America full of enthusiasm for health education; and the League of Red Cross Societies is cooperating with the Czecho-Slovakian Red Cross in a model child welfare demonstration in Slovakia and in the operation of a demonstration health propaganda unit which has just begun its work in Prague. All in all, Czecho-Slovakia promises to be a center of inspiration for the whole region of central Europe along health lines.

In Jugo-Slavia, too, the Ministry of Health has recently formulated a program of public health education which is relatively the most ambitious yet undertaken in any European country; and a most admirable piece of child welfare work is being conducted by the Serbian Child Welfare Association, directed by Dr. R. R. Reeder, with finances derived chiefly from the United States.

Poland is more heavily handicapped by recent war conditions than most of its neighboring states, but even here it is encouraging to note that an admirably organized public health laboratory has been developed by Dr. Rajchman, which is supplying not only Poland, but other countries as well, with excellent sera and vaccines.

In Roumania an extensive plan for child welfare work is being organized by the Prince Mercea Society and the League of Red Cross Societies is cooperating in this field, as well as in that of nursing education. In the Baltic States, Dr. Ryan of the American Red Cross is carrying on a magnificent health program which is also particularly concerned with child welfare.

In connection with the vital problem of nursing education it should be mentioned that the American Red Cross is operating a training school in Prague and two training schools in Poland which, with the school in Bucharest, and the projected school in Belgrade, are likely to exercise an incalculable influence on the development of public health nursing in central and eastern Europe. The international school of public health nursing organized by the League of Red Cross Societies in London will send back its first crop of graduates in June to take an active part in the front line activities of this sector of the public health campaign.

In the southern countries of Europe there is much interest in the malarial problem, and one particularly important demonstration is being carried

on in Spain in cooperation with the League of Red Cross Societies.

### Rural Hospital Units

In this brief review we have been concerned with notable new developments, but it should be mentioned that the normally admirable health activities of the northern states of Europe are making steady progress, a particularly interesting aspect of the work being the organization of small hospital units for rural districts in Sweden and, to some extent, in Norway, by cooperation between governments and the national Red Cross societies. In Switzerland, which has been the home of so many educational movements, interest has been aroused in the question of training the personnel needed for administrative health work, and comprehensive plans are under way for the development of special courses along this line at the universities of Zurich and Lausanne.

The little city of Geneva is naturally an active center for the exchange of health information, and the stimulation of health activity, for the whole of Europe, since there are here in operation three important international bureaus all of which are more or less directly interested in the public health movement. The League of Red Cross Societies, inspired by the vision of Mr. Henry P. Davison, embodies a new voluntary movement for the development of public health through the medium of Red Cross societies throughout the world. The International Labour Bureau, although a branch of the League of Nations, constitutes practically a separate organization dealing with the great problems of industrial life and having large potentialities of service in the health field. And, finally, the League of Nations itself has practically completed the organization of a technical committee on health which will be in position to coordinate and extend governmental procedure in regard to international health questions so as to bring in a new era in the field of international quarantine.

The shadow of the war is still dark on this continent, but the nations are earnestly at work, at home on local problems, and in the councils of the Leagues upon the vastly more difficult problems of international co-ordination; while among both national and world problems, public health is taking a prominent place. The broadened vision of the situation gives the best assurance of a consistent attack upon the whole problem.

## Dr. Carlos Chagas Visits the United States

Another distinguished visitor has recently come to the United States in the person of Dr. Carlos Chagas of Rio de Janeiro, director of the Brazilian Department of Public Health, one of the eminent medical scientists of South America. Dr. Chagas is



the discoverer of the parasitic malady technically known as "Chagas' disease." Rio de Janeiro has been freed from yellow fever during the period of his association with Oswaldo Cruz, whom he succeeded as director of the Oswaldo Cruz Institute for Medical Research. In connection with the hookworm campaigns and other activities of the International Health Board in Brazil, Dr. Chagas has proved a wise counselor and loyal supporter. He comes to the United States as the guest of the International Health Board and the Rockefeller Foundation, his objective on this trip being to familiarize himself with important phases of medical and public health training and to survey matters which have a bearing upon his administrative public health work in Brazil.

The coming of Dr. Chagas must be regarded as an event of great importance in the progress of preventive medicine. His training and experience fit him in a peculiar way to add to the world's knowledge of certain diseases and the best means of combating them. His lectures at Johns Hopkins University and at the Harvard Medical School will be of distinct value to the theory and practice of hygiene in the United States and will suggest measures which should serve to bring closer together the two countries in higher ideals of scientific method in the practice of preventive medicine.

# Effect of Recreation on the Nervous System\*

Capacities Unexercised Finally Atrophy.  
Look to Your Leisure for Development.

BY BERENICE C. SKIDELSKY, COMMUNITY SERVICE, NEW YORK CITY

**M**ANY years of operation and study of the nervous disorders which are among the fruits of modern civilization have enabled Dr. Charles Loomis Dana, professor of

the waking day not taken up with gaining a livelihood. In a week of 168 hours, forty-four are given to work, fifty-six are given to sleep, and sixty-eight to leisure.

"I was talking recently with an intelligent young woman who is an exponent of Socialism," he said, "who declared that the time will come when the working day will be of four hours' duration.

"'But,' I said to her, 'what will the workers do with the rest of the time?'

"'Oh, they will read—study—play, go to concerts, organize a theater of their own,' she replied promptly.

"I replied, 'They will do nothing of the kind! As I see human nature in the country and our own city, they will sit at home, overeat, or smoke, go for a walk, or go to a movie, or prize fight, or ball game.'

The average person does not know how to do the better and wiser, and really amusing things of leisured life.

"It takes a special training to live a life of leisure and amusement wisely. Here, as in every phase of life, intelligent and constructive planning is necessary to safeguard the individual against following the line of least resistance, and drifting into a diffuseness and aimlessness of attitude that leads nowhere except in the direction of disintegration."

"What might be some of these 'lines of least resistance'?" questioned the interviewer.



Underwood & Underwood.

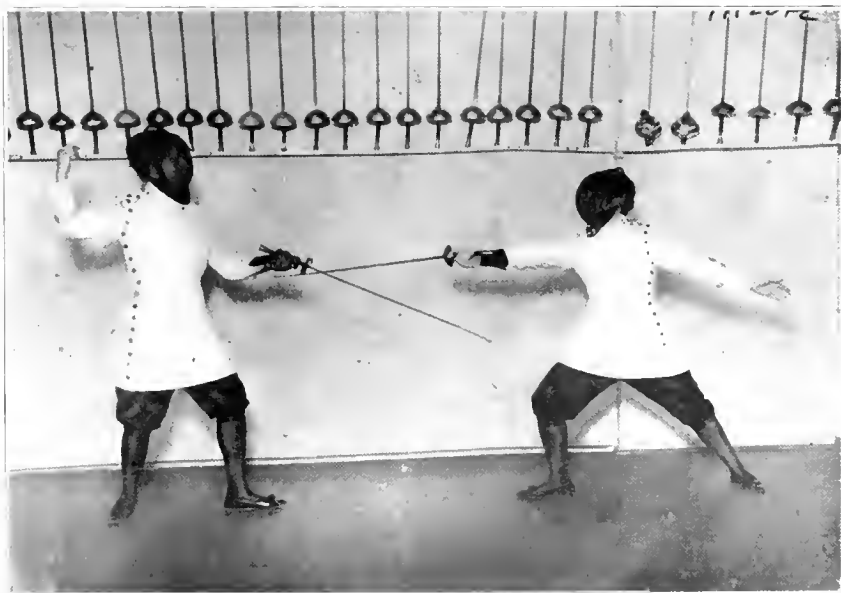
This lively scrimmage occurred in a recent hockey match in Philadelphia. When is work not work, but play?"

nervous diseases at Cornell Medical College, to speak with authority concerning their nature, causes, and cure. As a result of his observation among persons of all classes, ages, and occupations, he has arrived at certain conclusions, which he discussed in the recent interview reported in this article.

## Leisure Has Its Hazards

One of the most significant of these conclusions is to the effect that idleness disorders are more serious than occupational disorders; more disorders of the mind and of the nerves arise from a misuse of the leisure time than from the exigencies of the regular work or occupation. Rapid increase in wages and wealth, also labor agitation, and the legislation which has grown out of it, have resulted in a greatly increased "leisure class," or semi-leisure class, to be more accurate. That is, shorter working hours than ever before in the world's history have brought it about that most people have many hours of

The apparent excellence of this state of things, however, according to Dr. Dana, is spoiled by ignorance of Americans of how to use leisure wisely.



Western Newspaper Union.

Quick reaction time as well as supple bodies result from the parry and thrust of fencing. Make the achievement of skill in some side line the object of your leisure pursuits.

\*An interview with Charles Loomis Dana, professor of nervous diseases, Cornell Medical College, New York.



Underwood &amp; Underwood.

Group calisthenics may or may not constitute recreation. If corrective of fatigue postures, or if entered into with a spirit of fun, relaxation and diversion may be thus obtained.

"Well," Dr. Dana responded with a smile, "an extra hour or two of rest might mean opportunity to drink, gamble, go to cheap shows, overeat, quarrel with one's wife, or any number of other profitless and joyless occupations. That same time spent in really playing baseball, golf, tennis, or in music or reading would yield greater return, surely, to body and mind. I believe in recreation as preferable to amusement. In recreation, *you* do something. In amusement you *see* it done."

### Early Habits Count

Dr. Dana dilated considerably upon the matter of reading. He regretted that such large numbers of people fail to form the habit when young and thus deprive themselves of this incomparable solace when years have crept upon them.

"I know a young man of twenty-four," he said by way of illustration, "who is in business with his father and whose one-sided recreational interest centers about the prize fighting ring and similar places, to whom I recently suggested that he take up H. G. Wells 'Outlines of History' and read it."

"Who is Wells?" was his reply.

"Yes, I know this sounds incredible, coming from a person with cultural opportunities; but it is true nevertheless."

Dr. Dana emphasized his belief that the capacity for intelligent recreation should be evoked in early youth, and a sense of its profound importance built up at the same time.

He mentioned two classes of persons from whom his patients are largely drawn, who are victims of an educational method that has failed to impress upon them a vital sense of the value of leisure time.

"Business men who have concentrated on making money, and women with nothing to do, are seemingly at opposite poles," said Dr. Dana. "Yet actually they arrive by diverse paths at the same goal of nervous upset."

"Let us take the business man first. He has devoted every thought and impulse over a long period of years

to problems of financial advancement. I am speaking now not merely of eager money makers, but also of many who simply are conscientiously trying to support their families and secure a competence for their old age. Doubtless the business man has thought that 'some day' he would relax, and go in for the joys of leisure which he is temporarily passing by. But alas! there are inexorable psychological laws whereby capacities which are unexercised gradually lose their flexibility, and finally atrophy, just as there are physical laws which make the same thing true of muscles. Interest in the cultural phases of life—in art, literature, music, social problems, and politics—disappears in about ten years; in twenty, it is almost beyond recall.

"The business man, then, arrives at a moment when his children have grown up and gone their own way in the world; he has made all the money he wants; he is 'fed up' with his unintermittent pursuit of riches; and he is conscious of vague, unformed longings for other interests. But he has developed a one-track mind; and, despite himself, he cannot pull out of the groove which long usage has worn so deep. This man's tragedy is that he did not have the proper warning, and the proper training, in his youth; if he had, he might have developed a few parallel tracks throughout the years, and would not find himself suddenly balked, and with paralyzed initiative.

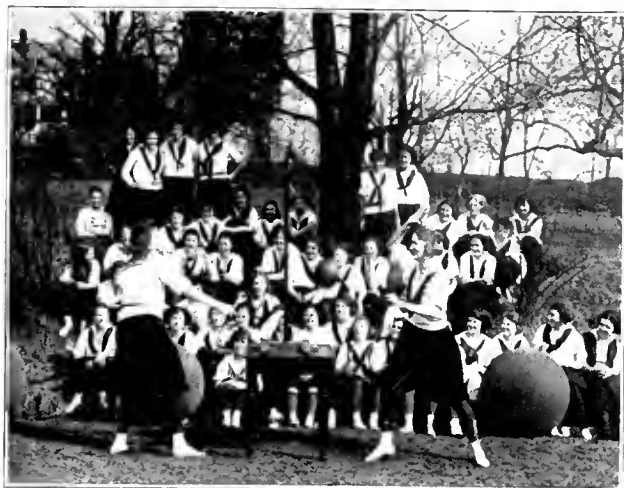
"The other problem—that of the



Underwood &amp; Underwood.

Telephone operators of the Chicago Telephone Company have elected to study musical expression and dancing under expert direction in their recreational hours.





Underwood &amp; Underwood.

The ingenious brain of Dr. Angell has worked out plays which supply psychological needs, and during the recreational hour undertake to inculcate the mastery of brains as well as muscles.



Underwood &amp; Underwood.

Games with underlying psychological purpose form an important innovation in the athletic programs of some of the eastern colleges. This game, "Who Am I?" constitutes an invigorating pastime.

women with nothing to do—is one of the most frequent and most serious with which the nerve specialist has to deal. These women, for the most part, are parasites; they have homes and husbands, plenty of means, and lots of time. They have no children, or else their children are grown up. They play bridge, go to teas or moving pictures, pour into the shops, wander about and watch the crowd, and in kindred ways make forlorn, undirected efforts to kill time. The best solution for these women is to find some work to do. They are ordered to seek their cure in gymnasiums, in public service in museums, and in courses of study.

"And right here," Dr. Dana interrupted himself, "I want to make clear just what I mean by recreation. I do not mean play, in any restricted sense of the word. Work may be recreation, when it is a change of occupation. In brief, a recreation, to be salutary, must be some occupation interesting and absorbing enough to drive every possible consciousness of work or responsibility from the recreator's mind. Of course, it must not be exhausting, nor rob one of proper sleep—that would be defeating its own ends.

"But to return to the problem of the idle women. I spoke before of those with homes and husbands. There is another class, consisting of the women who for one reason or another do not marry, yet who are economically free. Their salvation lies in finding some profession which will absorb them, and in becoming masters of it, not mere dabblers. I am strongly in favor of a bureau of occupations for such women, to provide them with the necessary recreation—for

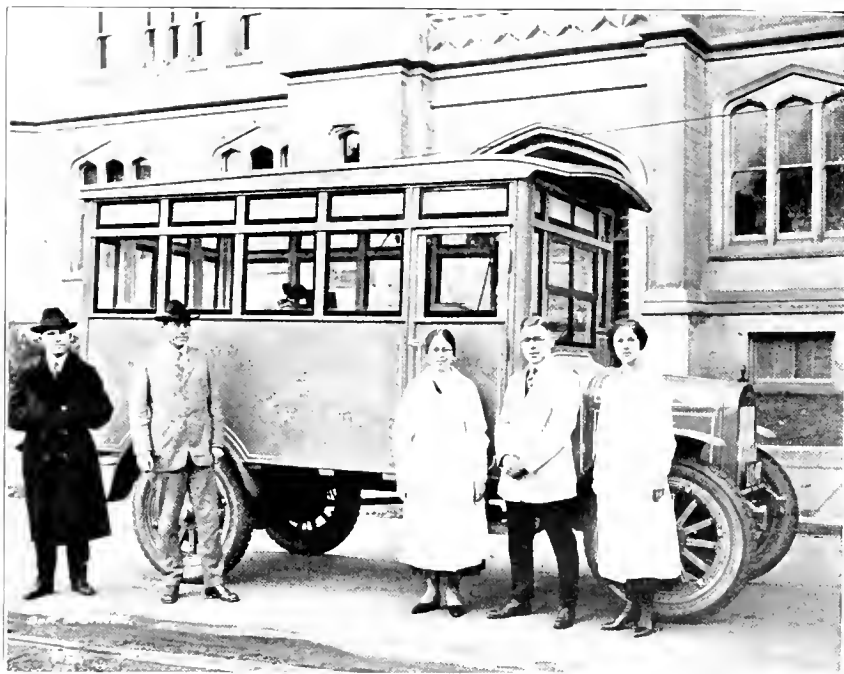
that is what, in their case, such work would be."

In summary, Dr. Dana stressed again the importance of starting young, and of training the individual to give intelligent direction to his recreational activities. He spoke with praise of the aims of Community Service, Incorporated, whose representatives go into various communities and teach the members of them how to get together for organized recreation,

along lines of drama, glee clubs, sings, athletics, hikes, and a multitude of other interests sufficiently diversified to provide for all ages and temperaments. He concluded:

"When young folks are taught the worth and ways of recreation, they are taking out an insurance policy against nervous disorders; and in middle age, when they come to collect, they will find themselves reimbursed a hundred-fold."

### Scranton Has Motor Dental Clinic



The School District of the City of Scranton has provided a motor dental clinic which travels from school to school. The motor clinic is equipped with electric lights, electric dental engine, dental chair, and table, sterilizer, running water, built-in cabinet, and standard instruments of a dental office. The clinic is heavily enameled in white, inside and outside. The work of the dental clinic is devoted largely to extracting, scaling, cleaning, and polishing the teeth of the children of the first two grades and to practical demonstrations of the need for oral hygiene. To date, more than 3,800 children's mouths have been treated.

# The Work of the International Sanitary Bureau

## The Gospel of Hygienic Living is Carried Over Racial Boundary Lines

By DR. L. S. ROWE, PH.D., DIRECTOR GENERAL, PAN-AMERICAN UNION, WASHINGTON, D. C.

THE International Sanitary Bureau, established in the Pan-American Union, was first organized by resolution of the Second Pan-American Conference held in Mexico City, 1901-2. Its state purpose was prompt and effective co-operation in all matters pertaining to sanitation and health throughout the American republics. It was provided by this resolution that the Governing Board of the Pan-American Union should call a general convention of representatives of the health organizations of the several affiliated countries in 1902.

This convention formed a permanent organization with headquarters at Washington, D. C., and invoked the cooperation of the United States Public Health Service. Since that year, conventions have been held in Washington, October 9-14, 1905; Mexico 1909-1910; Santiago, Chile, November City, December 2-7, 1907; San José, Costa Rica, December 25-January 3, 1908-1909; Santiago, Chile, November 5-11, 1911, and the most recent at Montevideo, December 12-20, 1920. To each of these the United States has sent delegates.

The whole purpose of the International Sanitary Bureau is the mutual and practical application of those theories and practices most generally advantageous for the health of the various nations. At the Montevideo convention it was agreed to place the work of the Commission on a more firm and stable basis, broaden its scope and add to its definiteness. To this end a special office has been opened in the Pan-American Union building at Washington, and is now in charge of a staff of special workers consisting of an Honorary Director and seven active members. All of the republics are requested to remit data relating to the sanitary conditions of their respective countries and to furnish every facility for a thorough and careful study of any outbreak of pestilential disease within their limits, so that the Commission may be able to lend necessary aid. A mutual exchange of information concerning special research, discoveries in medical science, treatment of special diseases, epidemics, clinical methods, and all

*No nation can boast of a frontier that is germ proof, and sanitary defenses must be organized against imported as well as endemic diseases. Scientific sanitation, therefore, hinges upon the prompt and effectual international correlation of all facts pertaining to health matters.*

*The International Sanitary Bureau serves as a clearing house for all pertinent information, promotes the rapid interchange of advanced scientific thought, and fosters that rapport which enables the formation of a solid front against disease.*

other matters of vital moment and sanitary value. Information concerning the existing status of preventable disease and progress reported, new outbreaks of contagious diseases, new measures for combating disease, demographic statistics, matters of interest relating to industrial hygiene, recent progress in child welfare, and matters of interest relating to water supply, drainage, and paving will be sent from the Washington headquarters to international sanitary authorities.

The Bureau will also endeavor to secure for such governments as may so desire, technical experts in the field of public health and sanitation and up-to-date detailed information relative to new sanitary processes. A mutual knowledge of each country's sanitary laws and regulations; the sanitation of cities and ports; prophylactic measures against plague, cholera, and yellow fever; measures for the destruction of rats, flies and mosquitoes; national and international protective and legislative measures relating to tuberculosis, venereal diseases, small-pox, trachoma, leprosy and scleroma; statistics of morbidity and mortality in the principal ports and cities, and information in regard to the adoption of the Bertillon nomenclature.

The work before the Commission is not only limitless in scope but inestimable in humanitarian value. With

the aid of the International Medical Congresses, the Scientific Congresses, and the Medical societies, its benefits will be world wide. The founder of scientific hygiene, Pettenkofer, once said that no frontiers could be made proof against germs. It follows, therefore, that the germs themselves must be eradicated. Further efforts toward the sanitary defense of the various countries must be made at their ports along the lines of the sanitary inspection of international maritime traffic, sanitary law on immigration, and quarantine treatment of imports and exports in order to guarantee hygienic safety and prevent commercial loss.

It is of vital importance that this interchange of international knowledge and sanitary procedure should be thoroughly understood and forcefully developed. With each stage of the advancement of methods of communication our boundary lines are becoming less definite in so far as the interchange of interests is concerned. To guard against the spread of this insidious enemy of mankind and to wage continuous warfare is a high and definite duty. Disease is no respecter of persons nor of localities nor races.

Nor can its control or eradication be accomplished by law alone. Volumes of the wisest legal regulations cannot regulate mortality nor stamp out the penalties for careless living and disobedience to the laws of nature. Complete comprehension and enlightening knowledge only can eradicate individually that which collectively becomes an international menace.

The Sanitary Bureau, therefore, looks forward toward reaching the brain and heart of individuals. The exchange of medical students and internes between the hospitals of the various countries will give mutual insight into conditions, diseases and their treatments; the establishment of the nursing profession on as sound and scientific a basis throughout Latin America as it is in the United States will go a long way toward bringing into the intimacies of the home the gospel of hygienic living; and the fostering of clinics and visiting

nurses will still further popularize cleanliness and health.

It is expected that the Bureau will furnish a Bulletin of its own in the near future, as materials are organized and brought together, but for the present articles and suggestions will appear in the Bulletins of the Pan-American Union, the Spanish and Portuguese editions of which will shortly issue a special number on sanitation.

The officers of the International Sanitary Commission are as follows:

Honorary Director, Dr. Pablo García, Medina, Bogotá, Colombia; Director, Surgeon General Hugh S. Cumming, United States Public Health Service, Washington, D. C.; Vice-Director, Assistant Surgeon General J. H. White, United States Public Health Service, Washington, D. C.; Secretary, Dr. Julio Bianchi, Minister of Guatemala, Washington, D. C.; Ex-

ecutive Clerk, W. P. Montgomery, Pan-American Union Building, Washington, D. C.; Board of Directors: Dr. J. Llambías, Director General Public Health Service, Buenos Aires, Argentine Republic; Dr. Carlos Chagas, Director General Public Health Service, Rio de Janeiro, Brazil; Dr. Juan Guiteras, Director General Public Health Service, Habana, Cuba; and Dr. Luis Razetti, Academy of Medicine, Caracas, Venezuela.

## New York Holds Unique Health Parade

MUCH in medical literature of recent months has had to do with child psychology. Mental tests, standards of mental devel-

opment, degrees and remediable features of delinquencies, psychotherapy—theories helpful, theories innocuous, theories distasteful—often inaccurate in generalizations and of remote application.

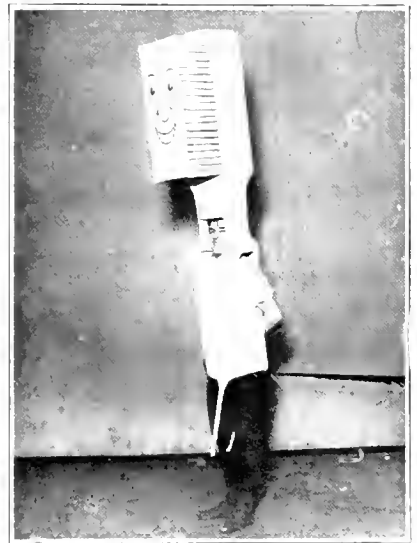
The recent health literature, on the other hand, becomes more and more concrete. Workers who are making first hand observations on the needs of the people are accumulating a wealth of material of definite value to other workers in the field. They are also learning the psychology of the popular mind, and esoteric speech is giving way to picture and drama that speak the universal language, and serve as direct incentives to action.

For, if the habits of a people are to be changed in the least degree their interests must be considered, their emotions stirred, and the psychologic moment of thought reconstructed on a new basis with the introduction of a new idea is being seized in educational health work to bring about a general appreciation that it is little matters which count

in a health program. The fitting of a house with the best sanitary appliances is ineffectual unless they are put to daily practical use. After all



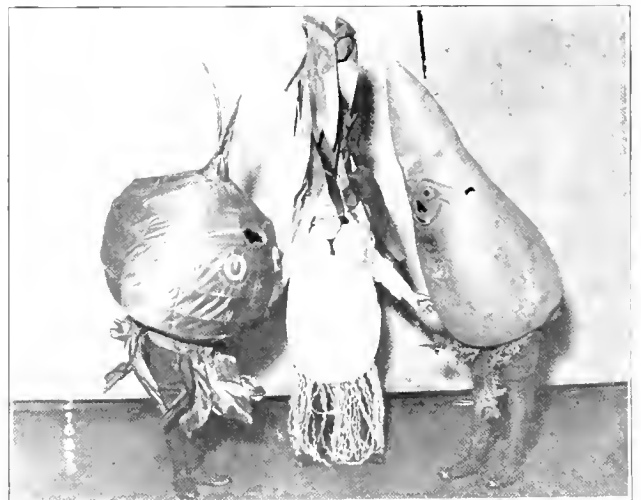
Underwood & Underwood.  
"Milk" chased "Tea" and "Coffee" up Fifth Avenue in the Boys' Loyalty Parade.



Underwood & Underwood.  
The toothbrush loomed large in New York's Health Parade.



Underwood & Underwood.  
These personifications of foods that are good and bad for children drive home the truth that milk, green vegetables, and ripe fruits must replace cheap cakes, tea and coffee.



Underwood & Underwood.  
Vitamines mean nothing to the child, but "Egg," "Apple," "Orange," "Carrot," presented visually as adjuncts to health, have their appeal.



Underwood &amp; Underwood.

Well cooked cereals, with plenty of foods containing the vital accessory factors, spell healthy and well ordered development for the children. Must health practices be enforced by spectacular appeals to reason?



Underwood &amp; Underwood.

Plenty of sound sleep in well ventilated rooms, and the daily practice of individual cleanliness inculcated in the habits of the coming generation simplifies the health work of the future. The most effective work is with the children.

is said, public health is as effectual as an ideal as the general health practices of the people warrant.

Work becomes routine. More and more as it becomes an accustomed habit, the difficulty increases of introducing better practices to lighten the load. So do health precepts, too often reiterated, fall upon deaf ears. Hence the play instincts favor the introduction of new ideas. Prejudice

is in abeyance, suggestion finds ready acceptance, and changes in habit voluntarily assumed have a self-interest that fixes them as no outside force can do. The dramatic instinct helps. What a child "acts" out impresses him; the make-believe world of the child is one of the greatest formative influences in his character.

All of these considerations mingled with the creative instinct and the

spirit of pure fun in the recent pageant of good health factors in the health parade recently put on in New York City. The genius of many organizations combined to work out striking symbols and picturesque effects. The parade justified the adjectives freely used in its description, such as "monster," "gigantic," "gargantuan," and "huge," and it may be expected to bear definite results.

## Human Efficiency and Levels of Intelligence

ONLY a pitiful handful of boys start in business with any special training for any industrial career, said Edwin S. Davis, chairman of the Board of Education of Chicago, in inaugurating Boys' Week on Friday, May 6. "We must give the boys a chance; our problem is to get them to accept education," he said.

The whole problem of inefficiency is surveyed from another angle by Henry Herbert Goddard in "Human Efficiency and Levels of Intelligence." "Whether thinking of children or adults," says Goddard, "in accounting for the large proportion of failures that are met with in society we have overlooked the relatively low mentality of the great middle group, the 'C' group which in army tests accounted for 61½ per cent of the men who received the army mental tests." Men in the "C" group, he goes on to say, are rarely capable of finishing high school.

Goddard would prevent vast numbers of social failures by a predetermination of the unalterable mental level of each individual as "condi-

tioned by the inborn nervous mechanism . . . that is but little affected by any later influence except such serious accidents as may destroy part of the mechanism." He holds that "any attempt at social adjustment which fails to take into account the determining character of the intelligence and its unalterable grade in each individual is illogical and inefficient."

He expresses the conviction that every human being reaches at some time a level of intelligence beyond which he never goes; that these levels range from the lowest or idiotic, to the highest level of genius. The number of people of relatively low intelligence is vastly greater than is generally appreciated and this mass of low level intelligence is an enormous menace to democracy unless it is recognized and properly treated.

The failure to appreciate this fact and control it, has resulted in a vast amount of delinquency, and such delinquency impairs the efficiency of the total group to an extent that is little appreciated. The intelligent group must do the planning and organizing

for the mass, that our whole attitude toward lower grades of intelligence must be philanthropic; not the hit and miss philanthropy with which we are all too familiar but the philanthropy based upon an intelligent understanding of the mental capacity of each individual.

Due recognition of the low mental status of the average men and intelligent placement in the effort to care for badly adapted individuals is but a makeshift remedy. Too many social factors are operative in the causation of mental unrest to postulate that the mental limitations which obtain indicate inherent mental deficiencies. Not until the methods of training are universal which make possible the development of each individual to his full mental capacity may we conclude that 61½ per cent of the American people are incompetent to receive high school training. A big brain and the inherent power to react on a high psychic plane avail nothing for the individual if society does not take full advantage of the plastic period of childhood to develop to the utmost each individual member.

# Public Baths Association of Philadelphia

By GEORGE L. HARRISON, JR., PRESIDENT, PHILADELPHIA, PA.

THE Public Baths Association of Philadelphia was organized in 1895, but it was not until April 21, 1898, that the first bath house at 412 Gaskill Street was opened to the public. In that year there were 21,656 bathers. From this small beginning, and a deficit of \$2,009.03, the Association has steadily grown until in 1920, with three bath houses, there were 474,201 bathers and a surplus from operations of \$14,347.32, after paying mortgage interest amounting to \$1,048.25 and keeping the property in thorough repair. This surplus is strictly from operations, and does not include donations or interest on the building fund. All surplus funds are turned into the building fund and a new bath house built as soon as possible.

## Should Be Accessible

Our experience shows that a bath house should be situated on, or where it will be seen from, a main thoroughfare in a thickly populated section of the city, and the more people who pass by its doors between 8 a. m. and 4 p. m. the better, as in that case there are bathers all day and the plant does not stand nearly idle until the rush hours begin at 5 p. m. A plant should have about eighty baths in the proportion of five for men and one for women. One attendant can take care of from sixteen to twenty baths, and during the slack hours of the day these men clean the baths, wash the towels, etc. The plan of the baths is best shown from the illustration. The number of bathers in our heaviest summer month is about two and one-fourth times the number in our lightest winter month, showing how well the baths are used throughout the year. Originally the charge was five cents, for which was furnished a small piece of soap and one towel. Various changes, however, have been made from time to time, until now the charge is five cents for soap and towel until 5 p. m., after which time, and on Saturday, Sunday, and holidays, the charge is ten cents, but extra towels are five cents, and, while the towel furnished is sufficient, many take the extra towel, which accounts for the surplus from operations. No charge is made for children under ten years of age when accompanied by their parents. The time allowed in a bath is thirty min-

utes, for, although few stay so long, our bathers like to feel that they are not hurried. As the baths are kept very clean and attractive in appearance, our patrons are of all nationalities and many walks in life. We find the foreign born Jews among our best patrons. Boys and girls frequent the baths in considerable number, and many a newsboy will invest a nickel for a bath.

From time to time we are asked if we cannot make these baths free, or free on certain days. Our answer is always this: that even if the money were provided to run these baths free, we would not accept it, nor would we lower our prices. Our patrons are self-respecting people who have no other means of keeping clean, and most of them look on the baths as a business and want to pay for what they get. With this feeling they come into the baths as if going into a shop

to buy, and not with the shuffle of those going into a soup kitchen. Very little damage is ever done to our property through scratching names, breaking fixtures, or other malicious mischief. The city remits the taxes on our property and furnishes water at charity rates, which are one-fifteenth of the regular charges.

## Pride in Cleanliness

For a number of years wash rooms were maintained in both the men's and women's sections, where our patrons could bring and wash their own clothes; but this was found to be very unsatisfactory, and the tubs were taken out and additional baths installed. We found the rooms were occupied by people of the lowest type, who drove away by their actions and foul language the other and more desirable occupants.

The Public Baths are open every



Bath House at 1203-1205 Germantown Avenue, Philadelphia, in which building nearly one hundred thousand baths were taken in the first two complete years of operation.





An interior view showing the arrangement of shower baths.

day in the year from 8 a. m. to 8 p. m., with the exception of Sunday, when they are open from 7 a. m. until noon. On holidays, such as Christmas, Fourth of July, Thanksgiving Day, etc., they are open from 8 a. m. until 11 a. m., and on Saturday they are open until 9 p. m.

I wish the readers of this article to visit the baths and see the constant stream of people that enters

our building, not with the slouch of the bread line and the soup kitchen crowds, but with the sturdy self-respect of those who pay for what they get and with the pride of physical cleanliness.

I have not spoken of the technical side of our Association, but shall be very glad to furnish any information on the subject; such seemingly small details as the height of the seat from

the floor and the swing of the doors add or detract much in the operation of the plants.

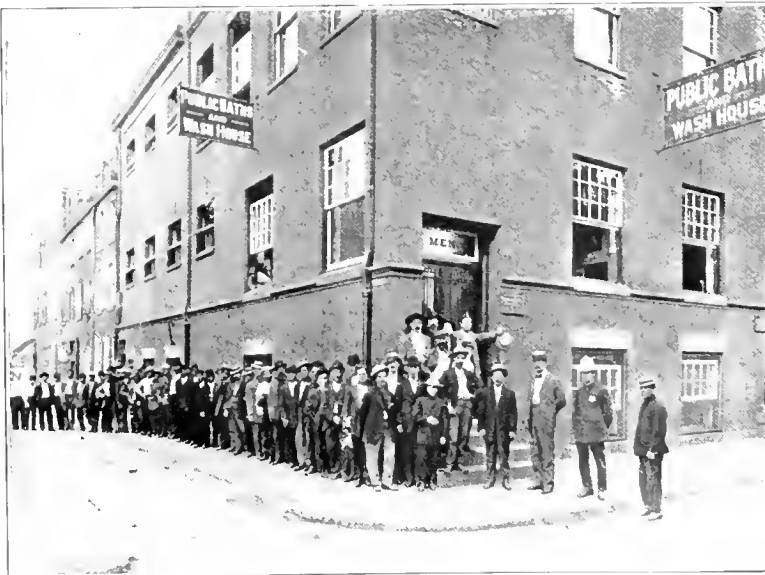
## Health Service Bureau for St. Louis

The St. Louis Chapter of the American Red Cross has established a Health Service Bureau as a permanent activity in St. Louis. The bureau is located at 805 Equitable Building, Sixth and Locust streets. Its purpose is to act as a clearing house for health information.

The various activities it plans to carry out are as follows: (1) By the collection of information pertaining to health work in the city, through which any interested person or organization should be able to secure up-to-date information in regard to all phases of public health in St. Louis, not including personal medical service. (2) Through the collection of pamphlets, journals, etc., pertaining to health, it is the purpose of the bureau to afford assistance to persons seeking technical or non-technical information. Already over 800 magazines, pamphlets, etc., have been catalogued and filed for public use. (3) Through its publicity section the bureau is attempting to give to the public information on matters pertaining to health in a popular way, through publication, through exhibits, distribution of literature, etc. (4) By means of a speakers' bureau it will provide public health speakers to organizations and clubs desiring such service. (5) One of the most important activities will be a research bureau which will function at the request of existing organizations for the purpose of securing information regarding local health conditions. (6) The bureau plans to study health needs from the point of view of education and to meet such needs as are not being met by existing organizations, in various ways making health information as attractive and accessible as possible.

In brief, the Health Service Bureau has been organized as one of the fields of work for the public health department of the local chapter of the Red Cross. The Bureau will be under the direction of Dr. Borden Veeder.

In the past it has been necessary for any individual or organization desiring information regarding what is being done in a health way in St. Louis to make an investigation. All this information, now on file at the Bureau, will be immediately available and should be of the greatest use to the physicians of the community.



An eager crowd waiting for the Gaskill Street Bath House to open at seven in the morning.



# Relation of Posture to Industrial Health\*

## A Chair Anatomically Correct May Still Fail Unless Fitted to the Work Place

BY EDITH HILLES, NEW YORK STATE INDUSTRIAL COMMISSION, NEW YORK CITY

IN A recent article on industrial seating, Frank B. Gilbreth is quoted as saying that the average factory chair reminded him of the time-worn story of the coffin: "The man who made it, didn't want it; the man who bought it, didn't use it; and the man who used it, didn't have much to say about it."

The principle aim in producing a seat for factory or store use seems to have been to make it unbreakable and so constructed that the salesman could with honesty claim that the chair would "never wear out."

Only now are manufacturers beginning to realize that a comfortable position at work saves energy units and means increased efficiency in production. Consequently, they are beginning to demand a chair for their workers which has been constructed with some knowledge of physiology, in addition to its "unbreakable" features.

The possibility for good posture at work has not been assured, however, when a good chair is secured. The relation of the different parts of the work place—the bench, chair, foot rest, the place for supplies and the

place for finished work—must be considered. The chair may be too high or too low for the work bench or machine, or vice versa. A brace or board, or a set of drawers may prevent a proper position of the worker's

slightly saddle shaped and with the front edge rounded; the feet resting comfortably on the floor or on a broad foot rest attached to the floor or bench; the bench at a height to allow plenty of room for the knees between the top of the seat and under side of the bench; no brace or other obstruction interfering with a comfortable position of the feet and legs; a back rest supporting the small of the back and not extending up far enough to interfere with free movement of the arms; supplies arranged so that no excessive reach is involved in the work. If an operator is able to rest herself by changing her position at work occasionally, a great deal of unnecessary fatigue can be avoided. For many operations, the thing to do is to begin by raising the bench and chair high enough to allow the operator to work sitting or standing.

There are now on the market or being tried out in laboratories, a number of chairs which have been constructed as the result of scientific study of how a physiologically correct seat should be made. The American Posture League have designed two chairs which they recommend for factory work.

Dr. Joel E. Goldthwait of Boston was the chairman of a committee that designed two chairs for the Massachusetts Institute of Technology in an



Barnet Phillips Company.

Chair approved by the American Posture League. It is made in four different heights, 16½, 17½, 19½ and 21½ inches, from floor to top of seat. The seat measures 16½ inches wide and 15½ inches deep.

feet and legs. The management of a large plant recently decided to replace round-topped stools in one department with chairs which had been highly recommended. These chairs were pointed out to a visitor with great pride, yet the workers were all standing. It turned out that the work bench measured thirty-one inches from the floor, while all the chairs were twenty-eight inches high. It was an impossibility for the workers to get their knees between the chair and the bench, and the result was that these superior seats were never used!

### The Principles Involved

Though in each individual case the type of work to be done must determine the best arrangements for sitting, the New York State Industrial Commission gives a general summary of the principles of correct seating as follows:

A seat, broad and not too deep,



E. E. Barney

A highly adjustable chair designed in the experimental department of a large typewriter company by Mr. E. E. Barney. The angle of the back rest adjusts automatically, turning on pins set in the two supports. The angle of the seat can be adjusted by pins that fit in holes in the legs of the chair. The curved foot rest supports the feet comfortably at all points.



Barnet Phillips Company.

High chair approved by the American Posture League. It is made in one height, adjustable from 27 inches to 35 inches. Width of seat, 14½ inches; depth, 13¼ inches; height of back, 12½ inches. Distance from top of seat to first slat of back, 7 inches. The chair is well suited to work at high benches where operators can either sit or stand.



Joseph &amp; Feiss Co.

Chair designed by Dr. Joel E. Goldthwait's Committee for work which requires leaning forward. The seat is 16 inches wide by 13 inches deep, the shallow depth permitting the weight to be thrown forward and borne by the hips, the body bending, as it should, from the hip line. The first slat of the back is 5 inches above the seat level. Manufactured in one height—17 inches. As shown here, it is used with success by a large clothing factory.

effort to have the seating of the Institute as anatomically and mechanically correct as the details of the building construction. One chair was designed for lecture and reading work where the students could lean back; the other chair was designed especially for work which had to be done leaning forward. This seat therefore, peculiarly adaptable for use in many industrial processes.

It is encouraging that several commercial chair companies are now attempting the manufacture of seats which conform in many particulars to the best standards which we have, and which are a far step in advance of the still too popular "kitchen chair," or round topped stool.

### Seat Materials

The most satisfactory material for a chair seat is wood. Cane seats are apt to become saggy and metal seats are too hard, or are made with sharp edges that cut off the circulation. The seat should be slightly saddle shaped and about sixteen inches wide. The best depth and tilt for the seat depends upon the type of work. The front edge of the seat is often a source of trouble; if it extends too far under the knees, the circulation is cut off; if the edge is left sharp and is not rounded carefully, this tends to cut off the circulation no matter what the depth of the seat may be.

1. California Industrial Welfare Commission, Bulletin No. 2a, Seating of Women and Minors in the Fruit and Vegetable Canning Industry in California. Harold Mestre, Sacramento, Government, 1919, p. 3.

The type of back which is most satisfactory for a seat to be used in a factory depends again on the nature of the work. Where constant lifting or reaching is involved, the back, unless carefully constructed, may interfere with arm movements. The California Industrial Commission in approving seats for women workers in the canneries, chose one with a rectangular seat and no back. In general, backs are used by workers and are recommended. Any chair which is to be used for rest, should, of course, have a back.

Where work can be done leaning

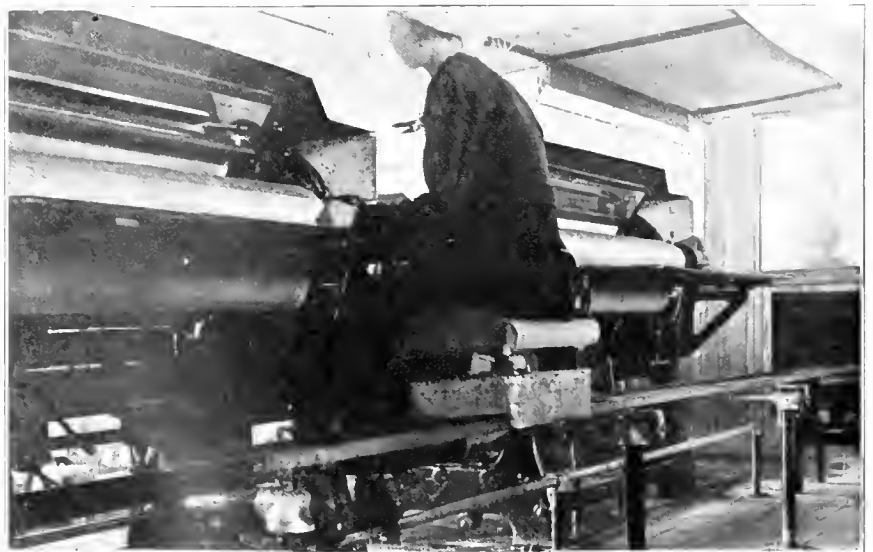
back, the American Posture League claims that there should be an open space about seven inches from the seat floor before the back rest begins. This will enable workers to sit well back in the chair. Support should be given at the small of the back and the support should be at least two and one-half inches wide and slightly curved. Sharp edges should be avoided and the horizontal supports should be spaced so that they do not pinch the worker by being too narrow or prevent the necessary space needed at the base of the chair by being too wide.

### The Matter of Adjustment

The question of adjustment is a difficult one. To make a chair adjustable and still keep it within a market price tends to produce a light type of seat that breaks or becomes loose and wobbly, and serious accidents are not infrequently caused by the sudden breaking of a chair.

There is a great difference of opinion as to whether a chair should be made with adjustable parts or whether it is not better to construct it in different heights and sizes. Some chairs are made in as many as six heights.

There is again a great difference of opinion as to whether an adjustable chair should be constructed with tight nuts, etc., so that it could be adjusted only by a factory mechanic, or whether it should be constructed so that it could easily be adjusted by the operator by means of swivel screws, hand screws or pins. Some manufacturers claim that unless a chair can be adjusted by the operator,



A sliding seat arranged for a girl who is operating two collar ironers. The wheels and ball bearings of the chair move easily, but supply box is low and in bad position on right. The operator may work sitting or standing.



This turntable in a printing establishment has replaced a straight work bench, but the stools and supply heights are not satisfactory, foot rests are lacking, and supply heights are unsuitable.

it never gets adjusted at all; others claim that an operator does not know what the proper adjustment should be, and that as soon as he gets tired, he begins to meddle with the chair adjustments, so that the result is worse than a bad non-adjustable seat.

The crux of the matter is that the chair should "fit the worker," and give

his feet comfortably on the floor. This foot rest should never be fastened to the seat but should be attached to the floor or workbench and should be adjustable in height. A foot rest about

ten and one-half inches wide and slightly tilted toward the front is very satisfactory. A swinging foot rest with a broad flat surface and attached to the under side of the bench has been used with great success. (Reproduced in Figure 6 of the first article of this series which appeared in the May issue of *THE NATION'S HEALTH*.)

A narrow foot rest such as a lead pipe, the edge of a board from the rung of a chair is a make-shift and gives no real support.

### Must Relate to Work Place

With most work places the bench height is stationary and it is necessary to adapt the height of the chair and foot rest to suit the individual worker. The first essential is that the worker sit with her knees and feet *under* the bench. If the bench is too low for this it must be raised. If a brace or bar interferes, it must be removed. The thickness of the bench top is an important matter. An overhanging support or brace may make it almost impossible for an operator to work effectively while seated. To fit the knees between the seat and the



A picture often seen which is productive of waste energy and fatigue on the part of the worker.

him the proper physiological support. Whether this is attained through a complex system of adjustments, or by constructing chairs in different sizes, is of minor importance.

### Foot Rests Called For

A foot rest should always be provided where the chair is of such height that the worker cannot rest



Taylor Society Mr. H. K. Hathaway.

The relationship of the parts to the work place has been carefully studied. The chair is on springs to avoid vibration. The operator works equally well standing or sitting. The seat, size, height, and slope have been given the individual work place. The trucks are made with units of convenient size for supplies, and the finished work placed in open side containers at easy height for the worker. The weight of the units is so regulated that a change of supplies comes at just the right time to relieve fatigue. Rest periods are also provided.

under side of the bench the operator is forced to sit so low that she cannot work properly; to sit high enough for work, she is forced to sit with her knees jammed *against* the bench and so is too far away from the bench to work properly.

A good height for a sitting-standing bench would vary according to the amount of strength needed in the operation. The height of sitting-standing benches shown in the report of the New York State Industrial Commission on Industrial Posture and Seating varies from thirty-three inches to thirty-seven inches. From six inches to ten inches should be left between the under side of the bench and the seat for knee space. A foot rest should be attached to the floor or to the bench and the chair should be arranged so that the operator can push it to one side when she stands at work.

Excessive reach for supplies or to stack finished goods should and can be easily avoided. To plan carefully the parts of the work place in their relationship to each other, is the most important task if good posture is desired.

In a rubber over-shoe plant, after a number of experiments had been tried, the following work place was standardized for the lasting department:

The bench is one inch thick, 37 inches from the floor, 42 inches wide, and a space is cut into the center 21 inches deep and 24 inches wide. The chair is placed in this cut out space and is of the type shown in Fig. 5. Height is adjustable from 25 to 31 inches, leaving at median height, 28 inches, an 8-inch space for knees. The foot rest is attached to the bench and is tilted toward the front, making a comfortable angle.

Supplies are kept on the right side of the bench and twelve racks, each holding four pairs of heavy wooden lasts, are kept on left side of bench. The operator while *seated* prepares all the lasts for soling, then she



Richmond Chase Company.  
Approved seats used in a California cannery. Women work either sitting or standing. Note the broad foot rest.

stands and puts soles on the entire set of lasts. This latter operation takes about one-third of the total time.



Scientific American.  
A curious "Chamber of Chair Horrors" collected in a large and progressive factory by Frank B. Gilbreth.

The "bent-double" position of the handfinishers in clothing factories can be largely corrected by proper seats

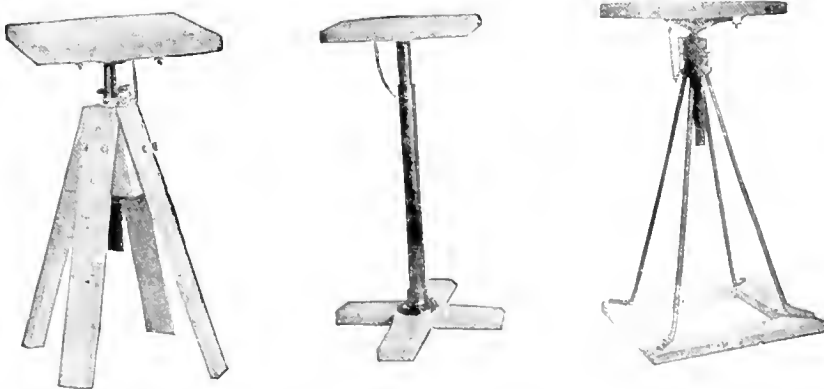
and benches for supplies. In one men's clothing plant where girls were working on buttonholes in overcoats, the heavy weight of the coats rested on the girls' knees, dragging off on the floor, as the buttonhole was made. Special supply trucks were put on casters, so designed that they combined a foot rest and a wide shelf where the overcoat could rest. These trucks were small enough to be pulled about easily. Although designed primarily to keep the coats from dragging on the floor, they proved even more successful in enabling the girls to work in a comfortable position.

The use of springs in the bottom of supply boxes or trucks is an ingenious way of avoiding tiresome reaches otherwise necessary as the piles of supplies diminish or increase in height.

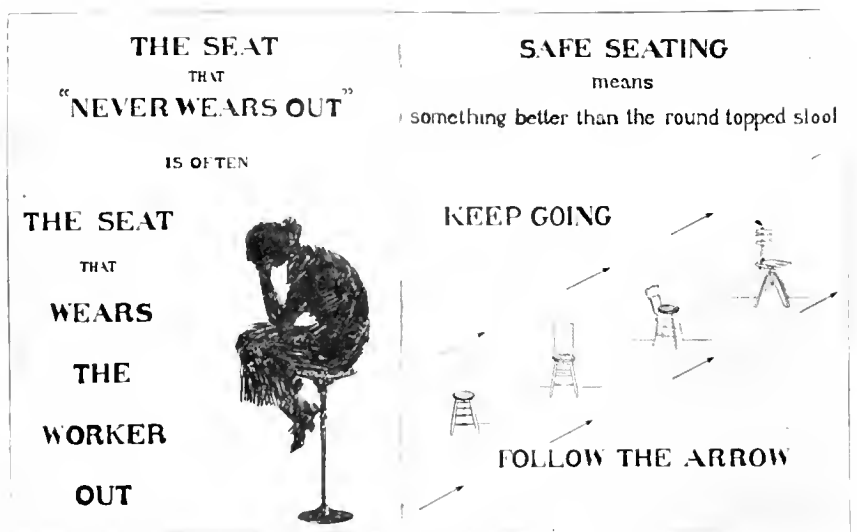
### California Standards

One of the most carefully worked out plans for good posture at work is that of the California Industrial Welfare Commission in its order on seats and work tables for women in canneries:

As far as, and to whatever extent, in the judgment of the commission, the nature of the work permits, the following provisions shall be effective; seats shall be provided, at work tables or machines for each and every woman or minor employed, and such seats shall be capable of such adjustment and shall be kept so adjusted to the work tables or machines that the position of the worker relative to the work shall be substantially the same whether seated or standing. Work tables, including cutting and canning tables and sorting belts, shall be of such dimensions and design that there are no physical impediments to efficient work in either a sitting or a standing position, and individually



Types of seats approved after installation, by the California Industrial Commission, for women in canneries. The height can be adjusted by pins that fit in holes in the seat support.



The inanimate equipment is everlasting; but what of the living worker?

adjustable foot rests shall be provided. New installations are to be approved by the commission.

The *Bulletin* of the California Commission is well worth studying, as the

Comfortable seating means safety for the worker and better output.

mentation. Like many details of industrial management, more is unknown than known, and there is no absolute standard. So little thought has been given to the problem of



A central office exchange of the New York Telephone Company. The chairs are adjusted to suit the individual workers. Foot rests are provided which do not show in the picture. In addition two rest periods each day are arranged during which the operators push back their chairs and stand at the board.

heights and dimensions are suggestive not only for canneries, but for all industries involving the same general types of work. The bench heights and arrangements for supplies would vary of course, according to the nature of the work—the strength and pressure involved, etc., but the California figures are the most definite that have been worked out for any specific industry, and may be modified and used in many instances.

We are still in the stage of experi-

posture in industry that at the present time almost any plant can go far in improving conditions by even the crudest attempt to plan the work place so that a fair chance for minimum posture standards is given the worker. This practice will result in general progress being made.

\*The data in these articles were taken from the report of the Bureau of Women in Industry to the New York State Industrial Commission, on Industrial Posture and Seating. The illustrations used are from those courteously furnished the Bureau for their report.

## Health Centers Aid the General Practitioner

The gradual change in the methods of diagnosis noted toward the latter part of the 19th century was outlined by Dr. Victor C. Vaughan before the Annual Congress of Medical Education, Licensure, Hospitals and Public Health held in Chicago March 10, 1921. Contrary to the popular notion that all notable achievements have been made in the medical centers, Dr. Vaughan gives credit where it belongs,—to the rural physician,—for the valuable contributions to science. Improvement of method and refinement of observation have ushered in a new era which requires facilities for diagnosis and treatment which is beyond the power of the recent medical graduate to acquire. These facilities,—library, laboratory, consultative service, so essential for diagnosis and treatment,—can be supplied through the health center. The needs of physician and patient were fully outlined by Dr. Vaughan, and he conceives as the best means by which these desiderata can be secured through the organization in every community of a community hospital, this community hospital to be supplemented by a tuberculosis hospital and such other agencies as may be required. Sixteen states have already enacted some kind of an Enabling Act for the construction of such hospitals. Such a hospital would be the center of hospital, laboratory and laboratory service to every legally qualified physician in the district. Preventive and curative medicine would be properly combined, collection of reliable morbidity statistics would be facilitated and it would afford the best possible way of placing all physicians in the community on the same level so far as opportunity is concerned, while at the same time it would give all citizens the benefit of scientific medicine, both preventive and curative.

## Dr. Addison Retires from Office

The *Lancet*, London, of April 9, 1921, marks the retirement of Dr. Addison as Minister of Health, and he is succeeded by Sir Alfred Mond. The Ministry of Health was inaugurated in June, 1919, and in the beginning its labors were largely the amalgamation and re-arrangement of scattered duties discharged by six or seven bureaus separately, the majority having been the work of the Local Government Board and the National Insurance Commissions.



# Programs for Venereal Disease Control

## Popular Education, Individual Ethics, and the Strong Arm of the Law Unite in this Effort

By MILLARD KNOWLTON, M.D., C.P.H., REGIONAL CONSULTANT, UNITED STATES PUBLIC HEALTH SERVICE, DIRECTOR, BUREAU OF VENEREAL DISEASES, NORTH CAROLINA STATE BOARD OF HEALTH, RALEIGH, N. C.

THE venereal disease campaign that has been pushed so vigorously for the past two years has been an experimental excursion into an unexplored realm. Prodded by war necessity, the country and the various states have undertaken to follow the vision of a few forward looking men. The course has led through bramble and thicket, and we are not yet out of the woods, but slowly some of the fundamental things are emerging from the chaotic thought surrounding the subject.

Before the war, efforts for venereal disease control were spasmodic and intermittent. Here and there health authorities feebly called upon doctors to report their cases by number, and a few state legislatures were beginning to consider measures for dealing with the problem. The chief energies focused on the subject had been expended in propaganda by a few voluntary organizations. Thus, while the preliminary work of gathering and disseminating information and formulating speculative and theoretical plans had been under way for some time, there had been little practical experience in applying such plans to the actual problem of venereal disease control.

### Health Officers Concerned

Accordingly, those of us who plunged into venereal disease work on a wave of war enthusiasm found a field unknown to be cultivated by methods untried. In proceeding from the known to the unknown it was but natural that the course adopted should be analogous to that pursued in the prevention of other communicable diseases. Experience soon demonstrated, however, that there were certain fundamental differences between venereal diseases and other communicable diseases that must be taken into account.

In the first place, all cases of venereal disease are not in communicable form and, therefore, all cases are not subject to control by administrative procedure of a health officer. Thus a case of syphilis of the central nervous system may give a positive Wassermann of both blood and spinal fluid

*In every case of communicable disease the good citizen will, with proper appeal and sufficient instruction, refuse to endanger public health. Restrictive measures, however, must control the negligent or indifferent patient and publicity and police power must be enlisted on the side of public safety. Prevention, not cure, should be the slogan in venereal diseases, and administrative power commensurate with the importance of the office must be vested in the health officer.*

yet not be a case to come under the jurisdiction of a health officer, for the reason that evidence cannot be produced to show that it is possible for such a patient to convey the disease to others. From a public health point of view it is necessary to make a clear distinction between a case that is infectious and a case that is not infectious. The health officer is interested in a case only so long as it is infectious and capable of transmitting infection to others. It is the health officer's business to prevent such transmission of infection. However much need there may be for a continuation of treatment until a clinical cure is effected, the health officer is officially concerned with treatment only until the patient becomes non-infectious. In making an examination of a patient to determine whether or not such patient is a menace to the public health, the health officer must determine two things: (1) the presence of venereal disease; and (2) whether or not the disease is present in communicable form. Action to protect the public health is based on the presence of disease in communicable form and not on the presence of disease *per se*.

Another and still more important difference between venereal diseases and other communicable diseases is that in the case of venereal diseases not all patients suffering from such diseases in communicable form are trusted so to conduct themselves as

menaces to the public health. In fact, very few patients will endanger the public health if properly instructed in methods of prevention unless, as in some instances, their occupations are such as will endanger others by the ordinary contact of daily life. Whether or not such a patient is a menace to the public health depends ordinarily upon his sex conduct. This introduces a factor which makes the venereal disease problem at once the most complicated, the most difficult, the most intricate, and in some respects the most important of all the public health problems.

The bearing of these differences between venereal diseases and other communicable diseases upon administrative measures to be taken for the protection of the public health is apparent upon a moment's reflection. Obviously, those cases that most concern the health officer are those that are most dangerous to the public health. Thus, reporting regulations that will result in having brought to the health officer's attention only those cases of venereal diseases that are dangerous to the public health will save his time in the investigation of non-infectious and trustworthy patients. If such regulations can be made to serve as a filter to catch only dangerous cases, the public health will be protected as well as if the health officer had to examine all patients suffering from these diseases. This end is attained by permitting the physician to report patients not dangerous to the public health by number without disclosure of name and requiring the name and address to be reported only in case the physician thinks the patient should come under a health officer's supervision for the protection of the public against his infection. Reports by number as well as reports by name are useful for statistical purposes.

Likewise, the invoking of quarantine as a measure to protect the public health will depend upon conditions outside the existence of venereal disease. In the majority of cases quarantine will not be required. Only in those infectious cases that cannot be trusted so to conduct themselves as



to avoid exposing others to infection will restrictive measures be necessary.

On account of the very complex factors involved, the method of carrying out quarantine procedure in venereal diseases must of necessity be different from the method of carrying out such procedure in other communicable diseases. In scarlet fever, for example, every case is a menace to the public health and, therefore, all cases are equally subject to quarantine. In such cases, quarantine can be carried out by isolation in the home. Most people wish to do the square thing, and the opinion of the neighbors is a powerful factor in preventing attempts to evade quarantine regulations when the house is placarded. In the case of venereal diseases, however, law abiding, responsible citizens who have had the misfortune to become infected may be trusted to avoid spreading the disease to others if they are properly instructed. Accordingly, restrictive measures to protect the public health may with safety be limited to those who would not carry out instructions, and who could not be trusted to avoid exposing others to infection while under treatment. Chief among this group of irresponsible people are the pimps and prostitutes. In applying quarantine to such characters isolation in the home has not been found effective. Forcible detention is necessary for the adequate protection of the public health.

There are other aspects of the problem in its larger relations that extend beyond the field of public health, and interlock with the duties of other officials and the functions of other departments of government. While the treatment of existing cases is now recognized as a primary necessity in order to render them non-infectious and thus not dangerous to the public health, it is clearly seen that treatment alone, without taking steps to stop the source of supply, is a good deal like the building of a hospital at the base of a cliff to care for those who fall over, instead of building a fence at the top to prevent them from falling. In the one case the hospital is a humane measure of cure, but it is more expensive and less effective than the fence as a measure of prevention. In the other, the necessity for treatment to render patients non-infectious would be greatly lessened by effective measures for the repression of prostitution which is the source from which venereal disease is obtained and passed on to innocent victims. The repression of prostitution is primarily the duty of peace

officers and court officials, but the law recognizes the relation of prostitution to the spread of venereal disease by requiring health officers to cooperate with other officials in performing this function. Such a broadening of duties greatly extends the horizon of the health officer and requires him to recognize and grapple with social problems as never before.

Of special importance in the promotion of any movement requiring public support in a popular government are those activities concerned with the dissemination of information usually designated as educational work. In the venereal disease campaign educational work is particularly difficult, owing to the relation of venereal diseases to sex conduct and the delicacy of the questions involved. Here, again, the things that must be done extend beyond the field of public health, this time into that of the school. Instruction concerning the contribution that sex makes to life and the physiology and hygiene of reproduction is distinctly an educational activity rather than a health activity. The health authorities are taking the initiative in this work because the educational authorities are not yet equipped to do so. The kind of educational work concerning this subject that belongs definitely to the health authorities is instruction concerning the ravages of venereal disease and the methods of cure, prevention and control. When the period of experimentation is over and the functions of the different branches of government with reference to this problem are more perfectly adjusted, the educational work will be divided between the health authorities and the educational authorities along these general lines.

The provision of recreational facilities as a preventive measure against venereal disease is mentioned here merely for the sake of completeness. While this line of work is important, it is not a health department function.

### A Huge Experiment

Thus, the huge, country-wide experiment that has been carried on for the last two or three years, has resulted in fixing certain definite lines of activity as fundamental to any complete program of venereal disease control. These may be enumerated as follows:

- (1) Treatment of existing cases to render them non-infectious.
- (2) Administrative measures of control by the health officer.
- (3) The repression of prostitution

for the purpose of cutting off the supply of infection.

(4) Educational measures directed toward giving higher standards of sex conduct and disseminating information concerning the ravages and prevention of venereal disease.

These, then, are the principles underlying venereal disease control. In carrying out this program in North Carolina, clinics for treatment have been established in nearly all the larger cities and an active campaign is now being conducted among physicians to stimulate interest in the better treatment of venereal diseases.

The educational work is being developed along approved lines by means of lectures, exhibits, motion pictures, and an extensive distribution of pamphlets. Lectures are arranged for men and women separately, and the work includes a special educational campaign among negroes by a colored physician. More than half a million pamphlets have already been distributed.

The repression of prostitution by officials of local communities has been encouraged through the collection and presentation of information concerning vice conditions.

The final working out of the program of venereal disease control will include administrative procedures for handling individual cases dangerous to the public health. Among these procedures will be that of quarantine, for which ample powers have been granted health officers by the Legislature. The supreme courts of the states of California, Iowa, Kansas, Nebraska, Texas, and Washington have all sustained laws or regulations conferring powers of quarantine for venereal disease upon health officers. There have been no adverse decisions. Quarantine for venereal disease is thus placed upon a sound legal basis. A health officer's order of quarantine is not subject to judicial review unless fraud or bad faith is alleged. A person held under quarantine cannot be released on bail. Thus a health officer has more power than a judge of the court.

The greater the power the greater the dignity of the office. When the public comes to realize that such great powers are vested in health officers, the health officer will be given greater public recognition and appreciation. If the power vested in an officer be considered as indicating the importance of the office, then the whole cause of public health will be advanced by gaining such public recognition through exercise of the quarantine power.

# Special Exercises for Special Needs

## Exercise to Be Corrective Must Be Definitely Prescribed and Continuously Supervised

BY FLORENCE MEREDITH, M.D., PROFESSOR OF HYGIENE, WOMAN'S MEDICAL COLLEGE OF PENNSYLVANIA, PHILADELPHIA, PA.

**G**RANTING that the gymnasium may be used for individual therapeutics and, best of all, for disease prevention in the individual case, we have to consider how to determine what classes of cases require individual work, and what will do well in regular class work. It is unquestionable that the decision can only be made on the basis of individual examinations,—thorough ones, of all applicants for gymnasium work. The usual perfunctory examination of heart and lungs—often incomplete in that only the stethoscope is used—does not alone constitute a safer guide than the clinical history of the girl. After all possible facts are elicited, it will usually be clear whether the girl presents special needs. No one would think of performing a surgical operation without a thorough preliminary examination. No more should one lightly recommend the use of gymnastic exercise,—a measure which may have as much influence for good or ill as a surgical operation.

### Study the Case

We believe that at the outset all beginners should receive at least a few evenings of individual work.

This is to get further data than an examination can possibly give as to the girl's requirements; to give the girl more confidence in herself as a gymnasium member; and to give her the confidence which results from the knowledge that her needs and limitations are understood. Many of these girls will require only such general exercise, ultimately, as may be given in groups, but need to have individual initiation in order that the amount and variety may be properly estimated.

Also, preliminary individual attention will discover those girls who have definite tendencies toward disability in various directions, who would not be in a position to have them properly guarded against in a class. These girls are often the ones who are underweight or overweight, who have poor posture, or weak abdominal muscles, who show a beginning relaxation of foot muscles.

Another class that is benefited by individual attention includes those girls who have conditions in which certain exercises can be used as a therapeutic measure; such conditions include constipation, dysmenorrhea, functional disturbances of the heart or the glands of internal secretion,

functional nervous disturbances, muscle and joint pain from improper use, poor lung development, poor circulation, somewhat increased arterial tension, toxemia from various causes, sleeplessness or sleepiness, the common type of moderate visceroptosis, flat feet, mental depression, including, of course, orthopedic conditions which are now commonly so treated, as scoliosis, etc.

The aim should be to get the girls of the first type into group work as soon as possible. We assign them to four evenings of special instruction and then, grading them as carefully as possible, put them into classes in other gymnasiums. The second class are kept until their tendencies toward illness have been sidetracked, no matter how long it takes. Results are what we are after, and if it takes one girl a whole season to get from the special instruction what she needs, the time is well spent. The girls of the third group are also kept until it is plain that they understand what they must do to keep in condition.

With each assignment for individual work a definite appointment should be made, spacing the time so that each girl shall have at least fifteen minutes personal instruction.

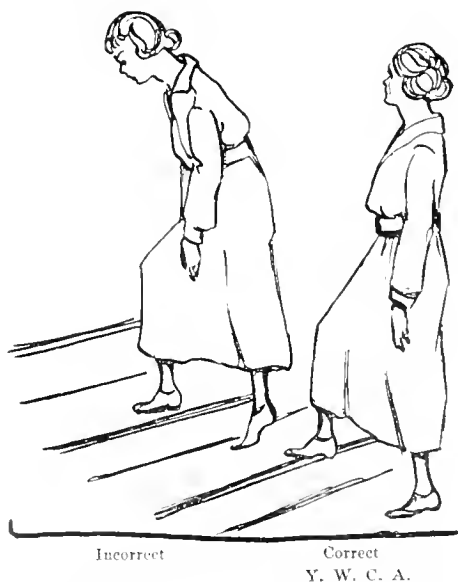


Fig. 1. Climbing stairs with back bent and chest contracted causes fatigue and breathlessness. If the body is kept erect, room is allowed for breathing and unhampered heart action.



Fig. 2. The correct posture in carrying a load is maintained either by shifting the load frequently or dividing it equally, thus avoiding a crooked back and a low shoulder. Correct poise makes for health and beauty.



Fig. 3. In walking the toes should point straight ahead for an easy gait.

After her physical examination, and before the hour appointed, the doctor and the physical director who made the examination should confer on her condition and together outline a series of exercises which seem suited to her needs. They should be under rather than over her ability, as the girl is likely to feel some soreness and become discouraged if at first she is permitted to overdo. The patient may also be alarmed at an undue increase in heart action and respiration, thinking she is being harmed. The exercises should be gradually increased, with frequent re-examination, if possible directly after

be familiar with certain abnormal conditions of heart action, and should be able to detect by appearance and pulse the necessity for further consultation with the doctor. The more capable the director is of doing this, the more confidence the girls will have in her and the better results she will get. Frequent changes of the series of exercises is the key to good success, or rather being ready to change them frequently, as the girl herself is better understood as time goes on and her needs change also.

Many more girls can be sent into the gymnasium under this system of individual work than could possibly be

they are not in the way of getting the greatest possible improvement.

The special exercises which we have found to be most necessary and are most frequently prescribed are those in which proper posture is developed, those tending to prevent and relieve constipation and dysmenorrhea, and those for improving foot conditions. Along with the former goes instruction in regard to clothing which will not be deforming or crippling, or which will not prevent normal functioning of all the muscles and structures of the body. With the second goes direction in regard to habits of ingestion and elimination. With the third, the whole subject of menstrual hygiene is explained. We try to adjust the minds of the girls to the normality of the function, doing away with the idea of invalidism. If organic trouble is found, as it seldom is, we try to get the trouble relieved by medical or surgical means. Finally, we endeavor to show the relation between good posture and general activity to the healthful functioning of the reproductive organs. In connection with foot troubles we emphasize the need of foot-shaped shoes.

The exercises used are largely based on the premise that proper posture and full muscular development and free circulation are essential to the normal functioning of any organ in the body. We lay especial stress on the development of the hitherto, in most cases, entirely unused abdominal and lumbar muscles. This weakness is not due entirely to the effect of corsets, as the condition is found as well in those who have never worn corsets. It is due to lack of education of these muscles, and hence lack of use. Since the relation of these muscles to poor posture is very close, and also since they bear a direct relation to lower abdominal and pelvic circulation, we endeavor to teach every girl their use, and see that she actually uses them. Poor position of viscera plus poor circulation through them is generally conceded to be a



Y. W. C. A.

Fig. 4. All foot exercises should be done in stocking feet or barefooted to allow full play of all muscles.

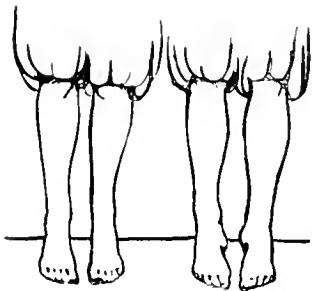


Y. W. C. A.

Fig. 5. Each exercise is to be repeated from ten to thirty times, resting after each five.

exercise. This is both to see the effect of the exercise and to reassure the girl about any symptoms which have frightened her—and patients of this type are usually frightened at something. Physical directors should be able to make examinations of back and feet and do measurements and strength tests. If they are not able to do this intelligently themselves, they cannot be considered competent to give exercises for the improvement of the condition. They need also to

sent into class work. We have great success in treating cardiac cases, chiefly functional and mild organic, and of disturbances of metabolism and internal secretion. Many of these cases, if doing definitely prescribed work under careful supervision, are safe and on the way to improvement. In a class, if safe as regards actual harm to themselves, which is not always the case, (although, as indicated above, I believe it is more often so than we think),



Y. W. C. A.

Fig. 6. Corrective exercises, the weight on the outside of the foot, for weak longitudinal arches is shown here.



Y. W. C. A.

Fig. 7. Which shoe will carry you to success in life? Certainly not the type of shoe which impedes circulation and hampers the use of the muscles.



Y. W. C. A.

Fig. 8. Foot circling is a strengthening exercise for weak transverse and longitudinal arches.

great factor in constipation and dysmenorrhea.

Since posture begins with the feet, we also begin with the feet in our attempts to improve posture. The putting on of good shoes fails if the feet are already deformed and crippled. We institute foot exercises whether or not we succeed in securing the adoption of better shaped shoes. Sometimes we postpone complete change in the style of shoe,—that is, for more than a short time every day, until the feet are in better condition to take advantage of the changes. But we hold the ideal before them of the perfect foot in the perfect shoe. Much can be done with even badly deformed and quite useless feet with this procedure, although, like other remedial measures, it does not always perform an immediate miracle, since the foundation of most troubles has been laid over a number of years. It certainly cannot be accomplished satisfactorily in classes, but at least must be begun individually.

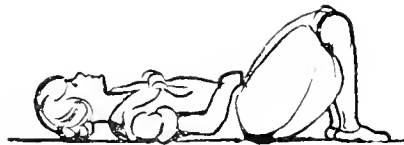
It may be said that exercises for posture, constipation, dysmenorrhea and flat feet could be as well taught in classes composed of those afflicted alike, but such is not the case. In the first place, no two people are afflicted exactly alike. In the second place, since we are demanding definite results, we should make sure that each girl is doing the exercises exactly right, which can only be done if she is individually supervised. The exercise, if done wrongly, will fail and the method will thus be discredited in the mind of the girl with whom it fails, and her attitude towards it will extend ultimately to others. In the third place, there is great danger of putting a girl into a classification which indicates any form of ill health. It will be impossible for her to get it out of her mind that she is not a normal girl, her special needs being only temporary. She is likely to classify herself permanently as a case of such and such a disorder, definitely tagged. The mental effect of such identification with any abnormality is very dangerous, and is less likely to occur if little emphasis is put on this

aspect of the case, as can be done in individual work. There is no harm in emphasizing special needs; in fact, it has a wholesome effect in encouraging a girl to consider herself an individuality, and one for whom she is individually responsible. The attitude should be fostered that the girl is normal, with a few bad habits which need correction,—the bad habit of constipation, or headaches, or poor heart action, or unused feet. She should be made to feel that they are nothing more than habits which are within her control, as they always are to the extent to which we assure

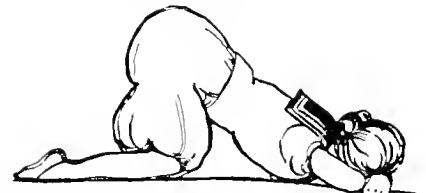
educational; that is, we tell the girl what we are trying to do in ways that she will understand, and we "put it up to her" whether she will do the work which will make possible the desired result. None of the exercises will suffice if done only in the gymnasium once a week. They should all be employed understandingly and hopefully by the girl at her own home as often as they are prescribed. They should be recognized to be as definitely prescribed for her as would be a prescription to be filled at the druggist's, and that she is as much expected to take them and profit by



Y. W. C. A.  
Fig. 9. Hand kneeling, swinging forward and back as a strengthening exercise for the great abdominal muscles, is corrective in menstrual disorders.



Y. W. C. A.  
Fig. 10. The rhythmic repetition of four simple movements has been devised by Dr. Clelia Ducl Mosher at the Leland Stanford Junior University for the correction of menstrual disorders.

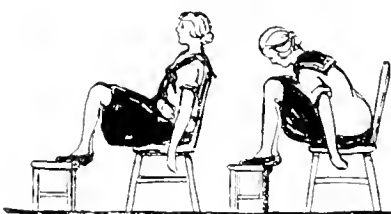


Y. W. C. A.  
Fig. 11. The knee chest position holding for three to five minutes night and morning is prescribed as a corrective in special disorders. Such simple means are an important part of a health regime.

her she can help herself. Then, as soon as the proper steps are taken, so that it is evident that the bad habit is on the way to be permanently controlled, she should again be associated with other normal, normally living girls. The ideal form of exercise, after this end has been attained, is not formal gymnastic work in groups, except such special work as her individual needs may continue to require, but she then may have sports and stunts, supplemented in any case where it is necessary by the special exercises some individuals may need throughout life.

In all our work, we attempt to be

them as she would be if she were taking medicine. The attitude of "trying" this method of getting health, "to see whether it will help," should be discouraged; nor should the gymnasium shoulder the burden of producing results if the girl neglects all other forms of healthful living except the exercise. For example, the obese should not be treated with exercise exclusively in order to reduce weight. Almost without exception there is much besides that they must do and, if these other things are not done, the physical director would, in my opinion, be justified in refusing her assistance. A half-hearted interest in



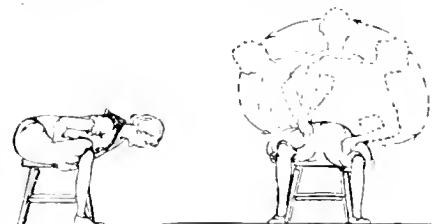
Y. W. C. A.

Fig. 12. Long and persistent doubling over movements are prescribed in cases of constipation.



Y. W. C. A.

Fig. 13. Double knee bending repeated in groups of five from ten to twenty times is effective in the correction of constipation.



Y. W. C. A.

Fig. 14. Another exercise for constipation is stride sitting and trunk circling, employed according to direction.

self-development, or a halfheaded one, is little likely to show results that we will be proud of. Unless the girl sees the reason for what she is doing and is convinced that it is sound, provided she cooperates with nature in this direction, we can count on little improvement. With this understanding and cooperation, the limits of the utility of the gymnasium will be vastly widened, if we can have enough individual work.

### Guide to Figures

These illustrations cover a series of exercises that were used at the New York Health Center for Women and Girls, conducted under the auspices of the War Work Council of the Y. W. C. A., of which Dr. Meredith was director.

*Fig. 1.*—Incorrect and correct methods of climbing stairs are shown.

Instead of climbing stairs with back bent and chest contracted (causing back fatigue and breathlessness) keep the body erect, doing the work with the legs and feet and thus allowing room for breathing and good heart action.

*Fig. 2.*—Correct and incorrect methods of carrying books or a bag are shown.

Change your load frequently from one arm to another, or, if possible, divide it, thus avoiding a crooked back and a low shoulder.

*Fig. 3.*—The correct and incorrect manner of walking is pictured.

Walking is standing in motion. In walking the toes should point straight ahead and the arms should swing evenly at the sides.

*Fig. 4.*—Foot exercises recommended for transverse arch.

*Position.*—Stand with toes together, heels three or four inches apart.

*Movements.*—(1) Raise feet with toes together, keeping heels on floor. (2) Replace.

Repeat from ten to thirty times, resting after each five.

*Fig. 5.*—Foot exercises recommended for weak longitudinal arches.

*Position.*—Sit with feet parallel, and pull toes under forcibly. Replace.

Repeat from ten to thirty times, resting after each time.

*Fig. 6.*—Foot exercise for weak longitudinal arches.

*Position.*—Stand with feet parallel (A).

*Movement.*—(1) Raise inner border up and out, knees straight, toes and heel on floor (B).

(2) Replace (A).

Repeat ten to thirty times, resting after each five.

*Fig. 7.*—A shoe to be correct (1) should have a straight inner border, because the foot is by nature straight on the inner side. (2)

Must allow room for the toes by having an outside curve following the lines of the toes.

(3) Must have a broad, low heel. (4) Should preferably have a flexible shank, because this allows the muscles of the arch to remain strong through use. (5) Should be low, allowing free circulation and use of the foot and ankle muscles.

*Fig. 8.*—Foot exercise for weak transverse and longitudinal arches.

*Position.*—Sit with right leg crossed over left knee, toe in with supporting foot, and bend up right foot.

*Movements.*—(1) Circle out to right, down, in to left, and up to starting position. Continue five times. (2) Reverse starting position, with left foot circling out to left, down, in to right, and up to starting position. Continue five times.

Repeat each exercise from forty to fifty times.

*Fig. 9.*—Exercise recommended for menstrual disorders.

*Position.*—Kneel on floor, bend forward until chest touches knees, arms stretched forward, hands resting on floor, shoulders distance apart.

*Movements.*—(1) Swing body forward and down to floor, straightening knees and bending elbows. (Return) to starting position.

Repeat five, ten, or fifteen times.

*Fig. 10.*—Exercise recommended for menstrual disorders by Dr. Clelia Duell Mosher of the Leland Stanford University.

*Position.*—Lie on back on floor or bed, with knees bent, feet resting on floor or bed; hand resting lightly on lower abdomen.

*Movements.*—(1) Raise abdomen. (2) Relax abdomen. (3) Contract abdomen forcibly. (4) Relax.

Repeat rhythmically, without strain or jerking, ten times.

*Fig. 11.*—Exercise recommended for menstrual disorders. Painful, too frequent, too profuse, too long continued and irregular.

*Position.*—Take position as illustrated.

Hold for three or five minutes night and morning.

*Fig. 12.*—Exercise for constipation.

*Position.*—Sit on chair with knees bent, feet resting on opposite chair or bench, two or three inches lower and twelve to eighteen inches distant, right arm folded low across abdomen.

*Movements.*—(1) Bend quickly forward, rounding back and pressing arm into abdomen. (2) Straighten back.

Repeat in groups of five, forty or fifty times.

*Fig. 13.*—Exercise for constipation.

*Position.*—Lie on back on floor or bed, with knees bent, feet resting on floor or bed.

*Movements.*—(1) Pull both knees to chest forcibly. (2) Replace.

Repeat in groups of five from ten to twenty times.

*Fig. 14.*—Exercise for constipation.

*Position.*—Sit astride on chair or stool, hands resting on thighs, body bent forward, back flat.

*Movements.*—Move trunk to left, upward, to right, and down, making complete circle.

Continue without stopping five times.

Repeat, circling to right.

Repeat alternately from ten to twenty times.

## Communicable Diseases

BY HOYT E. DEARHOLT, M.D., EXECUTIVE SECRETARY, WISCONSIN ANTI-TUBERCULOSIS ASSOCIATION, MILWAUKEE, WIS.

IN THE light (1) of our newer concepts in regard to transmission of communicable disease; and (2) of the doubtful utility of present methods of placarding, I submit that the time has arrived for a complete revision of the common regulations and accepted practices of health departments in the matter of the placarding of communicable diseases, a suggestion which does not indicate any disparagement of the importance and value of isolation. On the contrary, it is inspired by a desire to see as many as possible of the handicaps which stand in the way of 100 per cent enforcement and acceptance of quarantine regulations removed, in order that we may be assured a maximum of protection.

During the period characterized by belief in miasmas or effluvia as the cause of communicable disease, the use of large placards with type which could be read at some distance was justified. Because of the doubt then existing as to the extent to which such contagion might spread from contaminated houses, there was a virtue in the adoption of a characteristic "danger color" scheme which would permit potential victims to receive warning at distances far greater than the printed words were legible.

Few sanitarians today, however, believe that the *house* which contains a victim of communicable disease is dangerous to its neighborhood. Few any longer believe the *room* to be so. Even the lay public is rapidly learning that it is the *patient* and not his *surroundings* that deserves close surveillance. And yet the placards continue to be printed in garish colors and insistent type faces to acquaint him who runs with the fact that his neighbor or his neighbor's child is under ban as a victim of a pest.

Today there is no good argument for the retention of such placards as we have known and still know. We

may prate upon the duty of the honest physician to report his patients in order that their homes may be placarded. We may continue our attempts to convince the victim of a contagious disease that he should be "socially minded" enough to submit graciously to the indignity; but in the back part of the minds of the family physician, of the patient, and even of the sanitary policeman, there is a sneaking feeling that the whole process needs apology. Because of this feeling, every conscientious party to the placarding is made more or less uncomfortable, and less conscientious physicians, patients, and health officials ignore or evade the responsibility or obligation.

The substitute herein proposed would be as effective a warning in the light of our present knowledge, as are the characteristic quarantine notices of the past—and present. In general, it would be more so, inasmuch as the incentive for evasion would be far less than now exists, for reasons stated.

My proposal is simple, viz., the use of plain small cards of the size and character commonly used over electric push buttons to apprise a caller that "the bell is out of order." Such a card would meet every legitimate need of the health department in giving warning. Its adoption would appeal to the reason and sense of fair play of victim and neighborhood. It would be "good psychology." Finally, it would put the department on the side of science by removing it from a position of tacit endorsement of bygone superstitions in respect to the transmission of communicable diseases.

Volumes are now written upon the effect of the mind on the body. Much of it is true, but I wish a little more was thought of the effect of the body on the mind.—Florence Nightingale.

# The Veterinarian Contributes to Public Health

## Veterinarian and Physician Are Companions and Allies in Scientific Research

By J. HOWARD BEARD, M.D., UNIVERSITY OF ILLINOIS HEALTH SERVICE, URBANA, ILL.

AN IRONICAL Nature has decreed—a thorn for every rose—that the best friends of man should be, potentially, his most dangerous enemies. When prehistoric man tamed the cat and dog, he obtained allies and companions whom he later worshipped, and whose fidelity furnished him a theme for songs and for stories with which he enriched his literature.

Faithful Fido and purring Tabby are objects of much deserved as well as much misdirected sentiment. They are delightful pets, but on occasion, take advantage of their intimacy to give man rabies, round and tapeworms, hydatid, the flea, and the tick. They play with his children and, as they have been cuddled up, they have mechanically and directly spread ringworm, favus, diphtheria, scarlet fever, whooping cough, and possibly measles and typhoid fever.

Man domesticated the horse, the cow, the goat, the sheep, and the hog which have fed, and clothed, and in the case of the horse and ox, have borne him from place to place. They have broken and fertilized the soil which has grown grains, vegetables, and fruits more abundantly. Yet these noble animals, when ill, have proved to be the worst enemies of man. They have destroyed him with tuberculosis, killed him with anthrax, cut him off with glanders, filled his muscles with *Trichinæ*, racked his body with Malta fever, and loaded his intestine with tapeworms. They may become so dangerous to him when infected with anthrax that their meat, milk, hides, hair, or bristles may cause his death.

That man should have some of the roses and avoid the thorns, that these best friends should feed and clothe him today and not destroy him tomorrow, is the contribution of the veterinary surgeon to public health. In his efforts to protect and to save animals, the veterinarian has consciously and unsuspectingly pointed to hidden paths by which man has been able to attain an average life nearer the normal limit of three score and ten.

The veterinarian has rendered a distinct service to public health by his diligence in preventing tuberculosis,

*The inviolable distinctions made in state appropriations for the protection of health and for safeguarding the animal industries find their explanation in the priority of departments of agriculture in getting definite information before the people, and public health education may be expected to develop a proper balance. Meanwhile, by his definite contribution to science, the veterinarian has shown himself not the competitor, but the valuable aid and ally of the physician in his battle against disease.*

anthrax, Malta fever, rabies, glanders, pyogenic infections, foot-and-mouth disease, diphtheria, and trembles, diseases to which man and animals are alike susceptible.

Tuberculosis is very common in cattle and is becoming more and more prevalent among hogs. In every state in the Union the disease is present. In some states, the percentage may vary from 5 to 30 per cent of the cattle population; in others, investigations indicate that less than 1 per cent of the beef and dairy cattle are tuberculous. Nine per cent of the hogs slaughtered under government inspection during the fiscal year 1916 were in some degree affected with tuberculosis. The loss from tuberculosis is one of the heaviest taxes imposed upon the live-stock industry, amounting to at least \$40,000,000 annually in the United States.

Tuberculosis, in live-stock, is not only an economic loss,—it is a menace to health, particularly to that of children. More than one per cent of the total deaths from tuberculosis are due to the bovine bacillus. In young children approximately 10 per cent of the total deaths are caused by this type. The percentage tends to increase inversely to the age of the child.

The deaths, the sickness, and the suffering of man and animals, and the great financial loss incidental to bovine tuberculosis are entirely preventable. The use of the tuberculin test, scientific disposal of reactors,

prompt disinfection of the stables after removal of the reacting cattle, and the pasteurization of dairy products before feeding them to man, calves or swine, when uniformly done, will make bovine tuberculosis a pathologic curiosity in live-stock and in man.

Anthrax is as old as history. Moses describes, "a boil breaking forth with blains upon man and beast," probably anthrax. Homer, Seneca, and Virgil gave it a place in their poetry; and it attracted the attention of many medieval and modern writers. It was not, however, until 1849 that it was established that anthrax in man and animals is the same. In 1850 Rayer and Davaine noted the thread-like germ of the disease in the blood of dead sheep. During the next quarter of a century it was thoroughly studied by Pollender, Koch, and Pasteur.

### Record of Human Anthrax

Perhaps the first recorded case of human anthrax in the United States occurred in Philadelphia in 1834. An epizootic of murrain broke out among cattle near the city and spread into the town itself. Several persons engaged in skinning animals developed malignant pustule. Louisiana suffered two epidemics, one in 1835, and a second in 1851. In this state the disease first appeared among the deer feeding on the salt marshes near the mouth of the Mississippi and subsequently attacked the cattle of the French planters. In 1865-7 there were heavy losses in Mississippi from anthrax. In 1853 a Massachusetts physician noted "a most singular disease, a malady known from remotest antiquity as prevailing in animals, but observed among mankind only within a comparatively recent period." In 1881 Dr. James Law wrote: "The transmission of this disease to man is far more frequent than is generally supposed." Anthrax was reported as having been present in practically every state in the Union by 1900.

It is necessary to glance at the history of anthrax to understand the extent of its dissemination, its possibilities for evil, and the public health problem it presents today. For the



decade, 1900-1909, there were 227 deaths from anthrax in the registration area which for this period included from 40.5 to 56.1 per cent of the population. It has been steadily increasing. In 1918, there were forty-three deaths due to anthrax in the registration area. During twelve months of 1919-1920, eighteen cases with nine fatalities occurred in New York City.

Most cases of anthrax in animals are attributed to infection from fodder, grazing on fields where carcasses of victims of the disease have been left, or through eating hay cut from such fields. Infected water, artificial manure, and imported foodstuffs are also frequent causes. Blood sucking insects may be a factor.

Man acquires the disease mainly through handling animal products containing the spores or bacilli. Persons engaged in transporting, unpacking, sorting and handling hides, hair, wool, bristles, horns or bones in industrial processes, are likely to contract the disease, unless precaution is taken to prevent it. Pulmonary anthrax is commonly known as wool-sorters' disease because of its appearance almost entirely among hair and wool handlers. Bites of insects, and even of pet animals that have fed upon diseased material may convey the infection. A number of cases have been reported due to the use of shaving brushes contaminated with anthrax spores.

As anthrax in man is secondary to that in animals, prevention is largely a problem for the veterinarian. Disinfection of all raw materials is essential in those trades which require the handling of hides, hair, wool, bones and other substances likely to harbor the spores and bacilli.

Sixty-three persons lost their lives from rabies in the registration area of the United States in 1918 and thousands of dollars were spent for Pasteur treatment. Hundreds of animals had to endure untold suffering and their deaths further increased the economic loss on account of this disease.

### Veterinarians to the Fore

Hydrophobia is probably the most readily eradicated of communicable diseases. The infection is almost always due to the bites of dogs and the problem of prevention is the control of these animals for a sufficient time to cover the incubation period of the disease. The only measures necessary to obtain the result are: (1) a license for all valuable dogs and the destruction of all vagrants; (2) the

restraint either by a leash or better by an efficient muzzle of all dogs which appear in public places.

It seems inexcusable to permit this disease to exist causing terrible suffering to the affected animals, and menacing the lives of persons, particularly children on the streets. It remains because of misdirected sentiment and public indifference which are most amenable to education such as veterinarians and physicians can most successfully promote.

Foot-and-mouth disease is primarily a malady of cattle; secondarily an infection of man. It is transmitted to him through eating raw meat, uncooked milk products, or drinking raw milk. More rarely, it is acquired from the salivary secretions of diseased cattle reaching the mouth of man.

The local symptoms in man are not unlike those in cattle. Heat and dryness of the mouth are followed by eruption of pea-size vesicles over the lips, gums, cheeks, and edges of the tongue. The skin eruption appears mainly on the hands, tips of the fingers and base of the nails, it occurs less frequently on the toes and other parts of the body. The patient may complain of headache, pain of the limbs, cramps, diarrhea, weakness, and fever. The disease is seldom fatal and many mild cases are believed to be missed during the occurrence of an epidemic in cattle. Elimination of this infection in live stock or the pasteurization of milk at 60 degrees Centigrade for twenty minutes will protect man.

Milk sickness, commonly known as slows or trembles, is an illness of uncertain etiology, transmissible to man from cattle, through consumption of milk, milk products, or flesh of animals suffering from the disease. Little is known of the cause of trembles, although investigators have attributed it to—(1) a mineral poison; (2) a specific microbe; (3) to the ingestion of poisonous plants. The recent work of F. A. Wolf and his collaborators, has emphasized the poisonous plant theory of causation by presenting experimental evidence to show the relation of white snake root (*Eupatorium urticifolium*) to the occurrence of the disease.

Milk sickness in man is an acute, non-febrile disease characterized by marked depression, persistent vomiting, constipation, and frequent fatal termination. It is interesting, historically, as the cause of the death of Nancy Hanks, the mother of Lincoln.

Pyogenic infections, glanders, paratyphoid fever, sporotrichosis, and

actinomycosis are diseases of less importance of this general group to which both man and animals are susceptible, and from which he may be protected by meat inspection, pasteurization of milk, and measures to insure good health in domestic animals.

### Man May Menace Animals

The veterinary surgeon has contributed to public health by caring for animals infected with diseases which occur primarily in man; secondarily in animals. Both cattle and hogs may contract human tuberculosis and later transmit it to man.

Cowpox and horsepox have been known for centuries. They probably originated with man and according to many expert opinions are modified variola or smallpox. In 1796, Jenner showed they are capable of producing an immunity to smallpox when inoculated in man. While the veterinarian has rendered distinct service in controlling these diseases in animals, in the case of man, more accidental inoculations would reduce smallpox among the unvaccinated without subjecting them to the danger of disfigurement of variola.

In rare instances, milkmen have infected the udders of cows with *Streptococci* or diphtheria bacilli and in this manner have caused epidemics of septic sore throat and of diphtheria.

### The Host of Endoparasites

Veterinary science advances public health by stamping out endoparasitic diseases in live stock and in domestic animals, for which man may be the accidental, intermediary, or the only host. The more important internal parasites from the standpoint of public health, are trichina, *T. solium*, *T. saginata*, and *T. echinococcus*.

The *Tænia solium* has its encystic state in the hog, giving rise to what is commonly known as "measly pork." It may, however, undergo its larval form in man. In light infection the *Cysticercus cellulose* may be located in the connective tissues, muscles, or other tissues of man without giving symptoms and without discovery except at autopsy. In some instances the parasite may inhabit the brain, spinal canal, eye, heart, lung, or kidney and give rise to marked symptoms; in cerebral or cardiac infection it may cause death.

Fortunately, cysticercosis is becoming less frequent, due to decrease of the adult worm. This is the result of meat inspection, proper cooking, and better curing of pork. Hogs acquire the disease from human feces and from eating carcasses or offal.

The beef tape worm, *Tænia saginata*, is obtained from eating beef, particularly the tongue and the organs of mastication. Cattle acquire the disease by taking water or food contaminated with human dejecta.

While *T. saginata* may produce anemia in man, it does not present the danger of cysticercosis. Meat inspection, cold storage, and proper curing are gradually reducing the frequency of infection with this parasite. The encystic form dies in three weeks after killing, hence meat that has been preserved for twenty-one days may be considered safe.

Hydatid disease is an infection of considerable importance to both the physician and veterinary surgeon, as the larval stage of the echinococcus may occur in man, sheep, cattle, hogs, and dogs. The adult worm is found in the upper part of the intestine of dogs, wolves, and jackals. The dog is the chief source of infection. The gravid terminal segments of the worm are discharged in the feces of the dog and the eggs reach the intestine of man and domestic animals through contaminated food and water. Man may acquire the disease from hands soiled while petting dogs.

Trichinosis is due to *Trichinella spiralis*, a round worm, which may inhabit man, rats, or hogs. The common host of the parasite is the rat, which becomes infected in slaughter houses and butcher shops. Hogs get the disease by eating offal, rats, and possibly feces. The recent experiments of Raffensperger show that *Trichinæ* are not transmissible through the feces, unencysted forms are not capable of development when meat containing them is ingested, and the parasites spread from one host to another only as a result of the swallowing of meat containing the encysted larvæ.

The adult worm lives in the small intestine. The disease is produced by the embryos which penetrate the intestine, invade, and become encysted in the muscles. It is the migration of the embryos that give rise to symptoms, diagnosed as trichinosis.

Characteristic cases in man present signs referable to the gastro-intestinal tract, fever, severe pain of the muscles, edema, and leukocytosis, symptoms indicative of general infection. The disease is recognized by the clinical findings and microscopic examination of muscle tissue.

Trichinosis is preventable by proper curing and thorough cooking of pork. Pork products should be carefully inspected. Rats should be exterminated in slaughter houses, butcher shops,

markets, and places where hogs are kept. Offal should not be fed to hogs.

In the death of the rat man loses an unwelcome guest, who, on certain occasions, has dragged typhoid fever from the sewer to infect his host.

Animals suffering from septicemia, pyæmia, diarrhea or local suppuration are liable to be infected with *B. paratyphosus* or related bacilli and to furnish poisoned meat. Meat may be contaminated post-mortum from hands, butchers' tools, wrappings or other objects containing bacteria that may come in contact with it.

Meat poisoning is due more to bacterial growth than to the so-called ptomaines. Multiplication of bacteria and their dissemination are greatly favored by cutting and chopping the meat, and by warmth. This explains the greater prevalence of the disease in summer and its higher incidence among hamburger and sausage eaters.

The ordinary form of food poisoning gives rise to acute gastro-enteritis; the more severe cases show systemic symptoms. The great majority of the patients recover. Fatalities are comparatively rare.

Meat inspection affords little protection against the meat poisoning group of bacteria since they may pervade the meat and leave its appearance, flavor and odor unchanged. Animals known to have diseases likely to cause poisoning should be condemned.

*Bacillus botulinus*, an anaërobe, is capable of producing a highly poisonous exotoxin in food, especially in meat, nitrogenous vegetables, and ripe olives. Diphtheria and tetanus toxin and snake venom are harmless when swallowed, but the same is not true of botulism toxin. Exceedingly small amounts of this poison produce symptoms in twenty-four to thirty-six hours after its ingestion. It has a predilection for the nervous system in man and exhibits itself by secretory disturbances and motor paralysis, particularly of the motor cranial nerves.

Botulismus is highly fatal and a very little contaminated food may cause death. Limber neck in chickens and certain forms of forage poisoning are due to *Bacillus botulinus*.

The prevention of the disease depends mainly upon proper preservation of food, thorough cooking, and resistance to the temptation to taste food to determine if it is spoiled.

Successful treatment is difficult after symptoms are well developed, and the mortality is high. An antitoxin has been prepared which will

neutralize the toxin. A veterinarian, Robert Graham, has made valuable contributions to the study of botulismus and of the use of antitoxin in its treatment. With greater knowledge of botulism, earlier diagnosis will be possible and antitoxin should be more effective both as a prophylactic and as a therapeutic agent.

Discoveries in the field of veterinary science, with rare exceptions, have been helpful in the domain of medicine. Study of splenic fever in cattle and the demonstration of the relation of the tick to its transmission gave a new conception of the rôle of insects in the spread of disease and blazed the way for a better understanding of Rocky Mountain spotted fever, relapsing and South African tick fever in man. Investigation of surra in horses and nagana in cattle offered fertile suggestion in the study of human trypanosomiasis. Pasteur's immunization of chickens against cholera and cattle and sheep against anthrax are the forerunners of inoculation against typhoid fever, cholera, and plague. The world owes a great deal to the milkmaid who told the medical student, Edward Jenner, "I cannot take smallpox because I have had cowpox." Her information led to the discovery of vaccination which has saved millions of human beings from death or disfigurement. Incidentally it reduces the cases of cowpox among domestic animals.

The study of malnutrition, and its treatment in livestock and fowl has proved very helpful in dealing with scurvy, pellagra, rickets, and beriberi, and metabolic disease in man. Progress in animal feeding has usually created new possibilities for the better nutrition of man. Investigations of tumors in animals have shed additional light upon cancer.

The veterinarian's work with young animals has aided the pediatrician in feeding and caring for infants. Treatment of abnormal parturition and of post-partum illness in animals have in many instances offered helpful hints to the obstetrician which have extended the boundaries of his subject and in throwing greater safeguards around childbirth.

In the battle against disease, the veterinarian and the physician are complements and allies. The former strives to prevent sickness among animals and to protect man; the latter seeks to preserve the health of man and incidentally saves animals. The one alleviates the suffering of noble brutes; the other brings relief to his fellows. Both covet the glorious title of benefactor of humanity.

# Vitamines as Factors in Public Health

VITAMINES, which formerly occupied a position of almost purely scientific interest, have in a surprisingly short space of time come to be a vital study in the foods of the Nation. Consideration of vitamins becomes a public health problem parallel with realization of what happens in their absence. The war experiences in all countries have shown what will happen to people *en masse* if these food substances are absent from the diet. Scurvy, beriberi, and rickets are probably the three best known diseases due to deficiency of the vitamins. It is indeed possible, but not probable, that other diseases may be due, at least in part, to similar dietary deficiencies.

Blunt and Wang, in the March issue of the *Journal of Home Economics*, discuss ninety-three articles, all of which have appeared since 1917, and most of them in 1919-1920. Their review, then, may be considered a critical analysis of the present knowledge of vitamins, and for that reason it will be considered in detail here.

Their material is considered under the headings of the three vitamins now recognized: Fat-soluble A—for a number of years known to be present in butter fat, cod liver oil, green leaves, and certain other foods—is necessary for normal growth and in its absence from the diet there often develops an eye disease known as xerophthalmia or keratomalacia; Water-soluble B—of fairly wide distribution in plants—is necessary for growth and also for prevention of polyneuritis or beriberi; Water-soluble C—the latest of the three to be recognized—is the antiscorbutic vitamin.

## Deficiency Diseases

Fat-soluble A, the vitamin which apparently is the cause of the efficiency of cod liver oil, is necessary for proper development of infants. In Vienna since the war scurvy and also the eye troubles have developed from absence of vitamins. Rickets is certainly connected in some way with the lack of fat-soluble vitamins A, although it is improbable that a deficiency of this vitamin alone produces rickets. Low fat-soluble A, low calcium, poor protein, unsatisfactory salt combinations, acting together, may all contribute.

Regarding the occurrence of fat-soluble vitamins, although butter fat is still regarded as the most impor-

tant source, the quantity in the butter depends upon the quantity of A in the food of the cow and upon the manipulation of the butter. Whale oil, fish oils in general, fat fish, oleo oil, (and oleomargarine made from oleo oil), pig's liver oil, and liver tissue, kidney tissue, probably glandular organs in general, all have varying amounts. Many vegetables furnish rich sources; for instance, dried spinach, alfalfa, clover, timothy, and tomato. Carrots, sweet potatoes, yellow corn, although lower in A than spinach and alfalfa, all contain sufficient amounts for satisfactory growth.

A discussion of the generalization made by Steenbock that the foods which contain this vitamin also contain yellow coloring matter is entered into by Blunt and Wang, and it appears reasonably safe, they say, to assume that the fat-soluble vitamin is a yellow plant-pigment or a closely related compound.

*Are fats or merely the fat-soluble vitamin necessary in the diet?* Osborne and Mendel have made use of their dried alfalfa with its very high fat-soluble vitamin and very low fat content to study the question of true fat requirement. They found that their young rats thrived on a diet of dried alfalfa, yeast, starch, meat residue, and salts,—that is, a diet almost free from true fats. "If true fats are essential for nutrition during growth, the minimum necessary must be very small," they say.

Regarding the stability of the vitamin content, there seems to be considerable discussion as yet. Heat seems to be an important cause of the destruction of the Vitamin A.

For studying the water-soluble Vitamin B, observations have been continued on the growth of rats and on the onset of polyneuritis in pigeons and chickens. While it is not definitely proved that these two methods deal with one and the same substance, the assumption that such is the case is usually made. During the past year, however, evidence has been adduced by Emmett and Luros that two distinct substances may be involved, for a sample of unmilled rice heated to 120 degrees for six hours had ceased to be satisfactory for preventing polyneuritis in pigeons but was still satisfactory as the only source of water-soluble vitamin for growing rats.

The occurrence of this water-soluble B is less in animal than plant

foods, such as, for instance, the seeds of cereals and a number of legumes. Spinach, cabbage, potatoes, and carrots, the edible portion of the onion, turnips, beets, and tomatoes, immature alfalfa, clover, and timothy show decided advantages over the mature. Fruits are also rich in B, such as orange, lemon, and grape fruit juices. One of the most interesting and important facts, which is often overlooked, relates to that part of the cereal which is not rich in B, namely, the bran. The amount of B in commercial wheat bran depends entirely on the amount of germ associated with it.

Osborne and Mendel are cited as having determined that yeast is distinctly the richest known source of the water-soluble vitamin, being four times as efficient as dried spinach, which ranks next among a group studied quantitatively. Only half as rich as spinach are whole wheat, soy beans, dried eggs, milk solids. Cabbage, too, is not so satisfactory as spinach. Abderhalden has succeeded in protecting pigeons, fed on polished rice, against polyneuritis by such minute daily amounts of yeast as 0.05-0.01 gram.

Regarding the stability of water-soluble B, again there is dispute, but results point to the safety of water-soluble vitamins in ordinary cooking processes, but the danger of its destruction in commercial canning or high pressure cooking. Tinned meat is devoid of vitamins, as was proved by the development of beriberi in the British army in the Dardanelles and Mesopotamia. A relation seems to exist between the water-soluble vitamins in the diet and the amount of food eaten.

The results of the lack of B have been well studied. There was little difference between the group undergoing B starvation and that with general vitamin starvation. "Perhaps one of the most remarkable results of a dietary deficient in so-called anti-neuritis vitamin is the constant and very pronounced atrophy of the testicles in males and the similar but less pronounced atrophy of the ovary in females." Other investigators have noted similar results of vitamin starvation. Drummond found that when male rats after as short a time as fourteen days on a diet adequate except for B were mated with females on an adequate diet no pregnancies resulted. Vitamin B also had a defi-

nite effect on infant nutrition, which shows an improved development when proper amounts are fed.

Water-soluble C is an antiscorbutic vitamin. Chick is quoted as saying, "The vitamin is present in living vegetable and animal tissues, in largest amounts in fresh fruits and green vegetables, to a less extent in root vegetables and tubers. It is present in small amount in fresh meat and milk, and has not been detected in yeast, fats, cereals, pulses." Many vegetables possess this vitamin more readily than the fruits; for instance, raw cabbage, raw swede—which is a kind of turnip—beet root, carrots, and raw or cooked rhubarb. Cooking, however, in most instances diminishes or entirely destroys the efficiency of the vegetables except when they are young, although canned tomatoes are a most serviceable antiscorbutic for artificially fed infants. Canned tomatoes contain all three vitamins.

One more human scurvy experience is cited to illustrate a number of points so far stated. A number of South African Native Labor Corps were established in France during the war. The rations consisted of one pound frozen or preserved meat, eight

ounces fresh vegetables, and definite quantities of mealy meal (corn) or rice, bread, coffee, sugar, salt, margarine, and tobacco. In county depots where they could pick extra fruit (apples) no scurvy occurred, but in a camp when this was impossible, 40 per cent of the natives at one time showed symptoms of scurvy. The half pound of fresh vegetables probably allowed no margin for the reduction of the antiscorbutic, and yet all foods had been cooked for at least three hours. The chief parts of the cure was to give lemon juice, increase the supply of fresh vegetables, and limit the period of cooking to forty-five minutes. In a camp where the scurvy was most severe and lasted longest it was discovered that the instructions to shorten the cooking period had been disobeyed. The condition was soon improved when the cooking was reduced to forty-five minutes.

### Conclusions Stated

It is plain that remarkable as are the advances in the subject, we still have far to go for anything approaching complete knowledge. We need more quantitative information as to the distribution of the vitamins in foods and their resistance to all sorts

of manipulations—cooking, storing, aging. We lack knowledge of the quantitative advisable for human beings of different ages. Finally, and most fundamentally, we yet await the isolation of the substances themselves in purity and the establishment of their chemical composition.

It is very difficult to say what is the importance to the average individual of giving thought to these three vitamins in choosing the diet. Most of us probably use milk or leaf vegetables—McCullum's "protective foods"—to get an adequate supply of A, enough vegetables of all kinds and whole cereals to get B, enough uncooked or little cooked foods for C. But the occasional moderately well-to-do individual with dietary idiosyncrasies, many persons on very limited incomes, and many institutions must be close to the danger line. Probably C, with its marked instability to heating or drying, is the most often low in quantity, and A, with its limited distribution, second. It is more than probable, too, that many of the more obscure disorders and all sorts of common languors and inefficiencies and susceptibilities to many miscellaneous infections are connected with shortage in vitamins.

## Chicago Holds Pageant of Progress

PROGRESS has usually been regarded as the direct sequel to the creative imagination of comparatively few advance thinkers whose ideas, projected into the future, visualized some objective toward which the populace was thereby encouraged to aspire. Some have held that even the occasional genius is es-

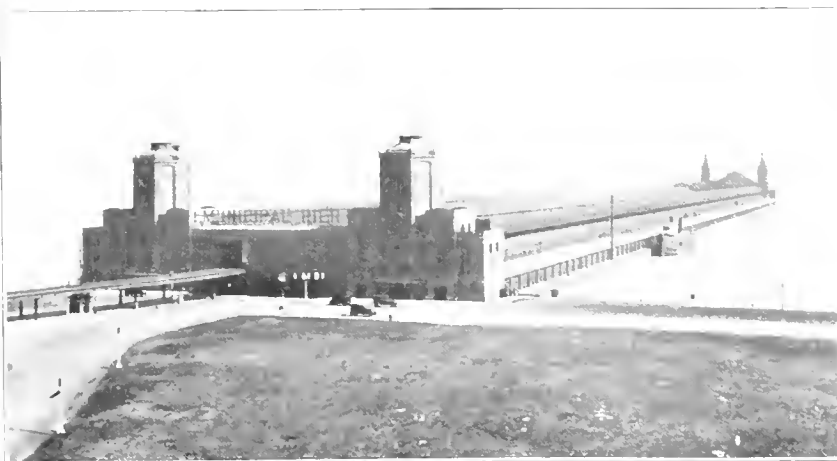
entially the product of his time, and that progress results from the collective thought of the whole people,—that somehow, somewhere in the process of collective effort there evolves a better vision than would be possible to any single member of the group.

Both arguments are in a measure

right, but in the consideration of the whole subject some confusion arises in regard to what really constitutes progress. One of our leading sociologists has written a huge tome, the purpose of which is to define progress and to furnish a yardstick to test out real values in many of our so-called advances. Is there at any time any conscious striving on the part of *all* the members of a given society toward the goal of the common welfare? Is the continuous change of opinion and action necessarily progress at all? By what criteria are we to know whether current opinion and action are constructive?

Chicago is attempting to answer some of these questions in her "Pageant of Progress," set for July 30 to August 14, 1921, to be held in the Municipal Pier, which is said to be the largest exposition building in the world, and the project is said to be the first in which an exposition of this kind has been planned on a non-profit basis,—the whole proceeds being devoted to public welfare and to publicity for the development of further work of the kind in the future.

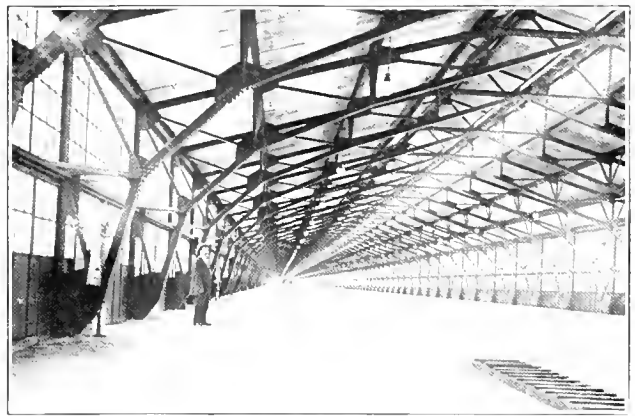
Practically every industry—local



Chicago's Municipal Pier will be the site of a sixteen-day Pageant of Progress, July 30 to August 14, 1921. The Pier is the largest exposition building in the world, having a total exhibition area of about four hundred thousand square feet. Municipal Pier recreational activities constitute regularly a phenomenal achievement in civic welfare.



The sixteen sections of the Pier, each three hundred feet long, have been set apart for special industries and groups of industries. Here will be represented all trades and industries, machines, inventions and scientific achievements.



The Municipal Pier was constructed with a definite civic purpose; it has become a definite factor in community life. It fittingly houses an exposition devoted to the promotion of public welfare.

and general—will be fittingly placed in order to set forth its special claims as a contribution toward social advancement; but it is in its health phases that the scheme is unique. Plans have been made to construct a glass house 110 feet in length, costing five thousand dollars, in which the examination, measurement, and classification in the prize baby contest will be carried out in full view of the public. Babies from the five states of Illinois, Indiana, Iowa, Michigan, and Wisconsin will be entered daily, the winning babies chosen by the end of the fourteen day period of the Pageant.

An exhibit of welfare work by several bureaus of the Department of Labor will be made in which the education of aliens to the need of naturalization, child welfare, and women's industrial work will be presented. The Secretary of Labor, James J. Davis, is an enthusiastic supporter of the Pageant of Progress Exposition.

The Loyal Order of Moose has also taken a space on the Pier to set forth the splendid work of that order through its naturalization and immigration bureaus, and its vocational department.

Three branches of the United States Government have expressed practical interest in the educational value of the Pageant of Progress Exposition. Mr. M. H. Leopold, safety engineer of the Bureau of Mines of the Department of the Interior, will demonstrate the value of the rescue cars used by the Department of Mines. The cars contain all the latest safety devices and a glass enclosed chamber, in which rescue crews operate in poisonous gases, will also be exhibited.

Dr. C. F. Bolduan, chief of the Section on Public Health Education of the Public Health Service, will make an exhibit of health service work in

combating malaria by mosquito extermination, rat-proof buildings to prevent plague contagion, and occupational hygiene for shell-shocked soldiers and tuberculous patients.

Exhibits especially pertaining to health will include: Milk Products Sections; Food Products Section; Public Safety Section; Safety First Section; Laundry and Sanitary Appliance Section; Chemical and Drugs, Medical Science, and Dental Supply Section; Agricultural and Mining Section; and Children's Section.

Especial value is given to the several exhibits by the manner in which educational and industrial achievements are linked together in each of the sections. Eminent educators and scientists have given thought to the psychologic appeal and will create in each section an exhibit which will interpret the activities of each sectional exhibit to the public by a special display, and will show the part which the colleges and universities are taking in the preparation of the younger generation to assume leadership in these industries.

Comparative values should be brought out in the several lines of human endeavor, and especially in this greatest health show the cumulative social value of intelligent co-operative effort will receive new emphasis.

### Connecticut Makes Survey

The Commissioner of Health of Connecticut has a plan for an intensive rat survey to determine what steps are necessary to protect the ports and cities of Connecticut from an invasion by bubonic plague. The plan was disclosed in a hearing on the health bill supported by the state health committee and appropriating \$30,000 for the work.

### Rat Eradication Pays

C. E. Hauer, chief sanitary inspector of the United States Public Health Service, in a recent *Public Health Report*, outlines a guide to the proper rat-proofing of buildings. The destruction of the rodent population, as far as possible, is a measure of primary importance in any district where bubonic plague is present, because the plague is primarily a disease of rodents, and secondarily a human infection.

Rat eradication is usually carried out in three ways: by intensive trapping, poisoning, and rat-proofing all buildings. The first two measures are important in the early operation of a campaign.

No community thus far has been absolutely free from rodents and the most that can be expected is to keep the rodents at an irreducible minimum. The writer suggests the passage of a rat-proofing ordinance, with the supervision of work by a man familiar with the habits of rats and a thorough knowledge of construction work. He outlines various methods of rat-proofing buildings, food depots, and all places where foodstuffs are stored, handled, or prepared, and residences, and all other buildings not in the former class. The most effective way of treating buildings, from his point of view, seems to be to install a concrete floor, properly protected by an area wall. All lumber retained on premises should be elevated on racks two feet above the ground, roof openings should be closed by proper screening, and above all, it is important that garbage be kept in metal containers with tight-fitting metal covers. All drains should be screened with cast-metal grating. Concrete used should be very carefully mixed because defective material seems to be no protection whatsoever.

# THE NATION'S HEALTH

(Continuing MODERN MEDICINE.)

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## Spring Planning of Summer Health Campaigns

NOW that the novelty of having a voice in municipal and national affairs is beginning to wear off somewhat, women are turning serious thoughts to many problems of public health which men seem rather to have slighted in the past. There is perhaps no division of public health work which has quite the same appeal to women as that pertaining to Child Welfare, and their record of achievement in this branch is indeed a notable one. In order that infant mortality may be still further reduced and the success of child welfare work assured, we must have organizations to raise funds, plan the work, carry on propaganda, and consider the problem in its broader aspects. We must have social workers and volunteers to help carry the word into the homes, educate the people into seeking advice, and create a proper health atmosphere. And, finally, we need those self-sacrificing, hard working, tactful angels of mercy, the nurses, who go into any and all kinds of homes, risking insults and worse, and while bathing the baby or preparing its food, deliver short lectures on subjects pertaining to hygiene, sanitation and home economics.

This is the season of the year when the need for such efforts is most acute, when infant mortality is on the up grade. Every community, no matter how small, should have definite plans perfected for aiding in this work, and it is just here

that the women can assist in educating the general public in the saving of hundreds of little lives. Suggestions as to scope and management of such a campaign may be had from the Federal Government or the various child welfare organizations. As a suggestion we might mention the need of covering, by means of lectures, newspaper articles, posters, and clinical conferences, some or all of the following points: The importance of breast nursing, the care of the baby in summer, the protection of young children from infectious diseases, the study of causes and treatment of malnutrition in children, regular examinations of children of school and pre-school age for remediable defects, immunization against smallpox and diphtheria, pre-natal care, etc.

Of course efforts such as we have outlined need not be confined to one sex or the other,—but when all is said and done, the health and development of our children depend first, last, and always, on the women.

## A National Department of Public Welfare Now Assured

A DEPARTMENT of public welfare with a secretary in the President's cabinet will probably be created as a fulfillment of party pledges. To this new department will be transferred several of the existing offices, boards and bureaus which deal with health, education and welfare.

If the law creating the new department succeeds in making a practical distribution of federal work among the departments, it will have general support. If it merely regroups certain offices and boards in the new department without disentangling the present chaos, it will serve no purpose except to provide additional patronage. Health work is now scattered in every department without any central coordinating machinery. Educational work is also developed in almost every department. We greatly fear that political and personal influence will be exerted to prevent the full consummation of the purpose for which the new department is supposed to be created.

## Compensation for Disease Incident to Occupation

IT IS probable that in the near future occupational diseases will become compensable in most states. Laws to this effect have been passed in New York and California and are just now in process of legislation in Ohio. With this precedent, it is only a matter of time before the compensation laws of other states will be changed so as to include in the definition of the word "in-



jury," disease due to, and arising from, occupation.

The average physician, including the average industrial physician, is lacking in anything like a thorough knowledge of the specific industrial poisons and their effects. The field is so large that perhaps this is not to be wondered at, but at least it is fair to insist that the industrial physician be familiar with the occupational diseases of the industries he serves. Once these diseases become compensable, not only must he be able to recognize them, but know how to treat them and how to overcome them and prevent their recurrence. His duty towards his employer can demand no less. Furthermore, he must maintain the highest standards of his profession by recognizing these diseases fairly and squarely when brought into contact with them. To gloss them over, minimize their effects, or to deny their existence from a mistaken idea of duty owed to his employer can only work injustice to the men intrusted to his care, lower his self-respect, impair his usefulness, and do the industry no real good.

Arriving at a diagnosis is often fraught with difficulties and pitfalls. Where the matter of compensation is involved, the possibility of confusion is increased even in the absence of intentional dishonesty. By handling these cases with entire open-mindedness and candor the industrial physician will earn the confidence of all parties, his diagnoses will be accepted, and much dispute and ill feeling avoided.

Up to this time, laws bearing upon the occupational disease have specified only definite occupational illnesses such as lead or arsenic poisoning. Concerning even these fairly well defined diseases there is not sufficient general knowledge, and in reference to the large number of poisonous substances arising in and from the dye industry, the lack of precise knowledge along the lines of industrial toxicology is formidable.

It is quite possible that in time the law will attempt to define the responsibility of industry for diseases with a less obvious industrial etiology. Much has been published, for instance, of the prevalence of tuberculosis in various industries.

All of this emphasizes that the ultimate success of industrial physicians and hygienists lies in a thorough knowledge of working conditions. If occupational disease laws are to be justly applied, then the industrial physician must be the arbiter and specific knowledge gained by study and actual experience is the one qualification that will entitle him to jurisdiction.

A. J. LANZA, M.D.

## The National Health Council Now at Work

THE National Health Council, composed at present of ten member organizations, which were listed elsewhere in this magazine, has accomplished through the formation of a coordinating body not only a time and energy saving device for the administration of health matters, but it has, through the concentration of the offices of the member organizations, multiplied their influence by thus becoming accessible to workers who visit New York. manifold possibilities suggest themselves in the way of better coordinated programs through such conferences and as an outgrowth of the information service maintained. From the Washington office an information service is being supplied the members on national health legislation, while in New York a general information bureau on health organization plans, resources, and activities, is being developed, which will enable other services to follow the successful establishment of these initial projects.

The Public Health Council, representing as it does many prominent national health agencies, should afford invaluable service as a clearing house and coordinating center in many fields where common functions are performed. It will become an integrating force among independent, autonomous agencies, rather than a merger of such agencies into one organization. Such a movement, through its membership, and through a mutually helpful relationship with state and local voluntary health agencies, should effectively serve the declared object of the National Health Council, which is, "the betterment of health work in the United States."

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## Are Health Departments Strictly Logical?

THE statement that "it is very probable that there is as yet no municipal or state health department which is organized along strictly logical lines," is made by Dr. Charles V. Chapin, veteran health officer of Providence, in the December issue of *New York Health News*. Dr. Chapin has been aiming to ascertain the relative values of different forms of public health work in order properly to marshal the forces against disease and ill health with the greatest effectiveness. The charge which Dr. Chapin makes against public health administration in this country, though severe, applies with equal force to practically every other governmental activity, whether it be educational, fire prevention, or

police protection. It must be admitted, however, that efforts to make our health program more logical and consequently less wasteful are bound to have their effect on the future health department organization. Tradition and politics are the two causes assigned by Dr. Chapin for the present state of health organization inefficiency.

Some years ago the American Public Health Association estimated that adequate health protection for a community would necessitate an appropriation of fifty cents per capita. In 1911 Dr. W. H. Park of the New York City Health Department estimated that from fifty cents to one dollar is required for community health protection. With the rising cost of labor and the present cost of other commodities these estimates are probably too low.

For example, comparison of per capita expenditures of the various municipal activities, in Oklahoma City, made by Horwood and Schevitz, revealed the fact that while \$4.00 per capita was spent in 1917 for education, \$1.92 for water, \$1.01 for fire safeguards, and \$0.78 for police protection, only \$0.20 per capita was spent for health conservation. While these figures indicate the relatively small appropriation for health protection, on further examination it was found that two of the largest items in the health department appropriation were for the care of patients at hospitals and for cutting weeds, neither of which can be considered proper expenditure for disease prevention. It is obvious therefore that in addition to directing attention to the proportionate size of the health department appropriation, it is exceedingly useful to analyze the expenditures for the various measures employed in the public health campaign.

Studies made by Franz Schneider, Jr., of the Russell Sage Foundation, Meader and Brooks of New York, Chapin of Providence, and Olesen of the United States Public Health Service relating to the evaluation of health activities, are significant in their similarity of ratings of the more important public health measures. The use of a score card is recommended by Olesen in a recent issue of *Public Health Reports* because "it stimulates the health officer to increased activity, points out the relative importance of the various branches of public health administration, and provides a means of self-measurement." The score card possesses a serious defect, however, in that it provides no means of measuring accurately the result of the health officer's activities.

On the whole, it can be expected that these attempts toward critical examination of our methods and programs will be reflected in a greatly improved and increasingly effective health machinery.

## What We Can Learn from Framingham

**B**ETWEEN four and five million dollars are spent annually by private agencies alone in the campaign against tuberculosis and an equal if not larger amount is spent by official departments for the same purpose. It will be readily recognized that the undertaking of an experiment such as the Framingham Tuberculosis Demonstration was well advised not only from the standpoint of research, but from a business standpoint as well. It is expected that the application of the knowledge and ideas gained from the Framingham experiment on relative values of the different measures in the anti-tuberculosis fight will many times repay the small cost of this community study.

Planned originally for a period of three years, on the recommendation of the special Appraisal Committee the Metropolitan Life Insurance Company provided funds for the continuance of this study for another three years. Four years have gone by since the inauguration of the Demonstration and it is profitable to summarize at this time a few of the more significant lessons taught us thus far. Of course these observations are not entirely conclusive, yet they are indications of sufficient strength to warrant their earnest consideration. To what extent do the Framingham findings answer the questions we are constantly asking on the validity and direction of our present anti-tuberculosis measures?

In a paper outlining the methods and accomplishments of the Framingham Demonstration, in a recent issue of the *American Review of Tuberculosis*, Dr. Donald B. Armstrong, executive officer, refers to a few of the more significant findings which can be briefly stated as follows:

(1) Physical examinations of a large part of the population of this typical American community revealed the presence of active tuberculosis in approximately 1 per cent of the population and another 1 per cent was classified as having arrested tuberculosis. In a city of 100,000 people there are, therefore, probably 1,000 cases of active disease and 1,000 arrested cases.

(2) An intensive search for cases by various means raised the ratio of known cases to deaths from three to one to nine to one. In a city of 100,000 population with 100 deaths a year, or a death rate of 100 per 100,000, there should be about nine hundred to one thousand cases under care or observation. "Does not this indicate," asks Dr. Armstrong, "that the 'next step' in tuberculosis work is the *first step*, namely the dis-

L. Armstrong, D. B.: Four Years of the Framingham Demonstration. *Am. Rev. Tuberc.*, 1921, iv, No. 4, p. 908.

covery of the disease? Is it not of relatively little use to provide adequate machinery for the care of one-third of the active cases in the community if the other two-thirds are undetected and unrestrained or unbenefited by therapeutic control?"

(3) Following a sickness survey carried out by nurses and insurance agents, physicians conducted thorough examinations and discovered approximately nine times as much tuberculosis as was found by the nurses in their search for the disease. It may be concluded, therefore, that adequate medical machinery is indispensable in the detection of tuberculosis.

(4) Routine medical examinations, particularly in schools and factories, will provide excellent opportunity for the discovery of much unrecognized and unknown tuberculosis. The establishment of an expert consultation service is, in the opinion of Dr. Armstrong, the most important single measure developed for the discovery of tuberculosis.

(5) Instead of only 45 per cent of the cases reported by physicians being in an early stage, as was the case at the beginning of the Demonstration, 83 per cent have been found in an early stage with the machinery developed by the Demonstration.

(6) One to two active cases have taken institutional treatment for every annual death in Framingham. For a city of 100,000 and with one hundred deaths annually, there should be available at least one hundred beds for tuberculosis.

(7) The percentage of active cases receiving institutional care was raised from 15 per cent to 33 per cent of the total.

From these Framingham experiences, Dr. Armstrong includes in a complete local program for tuberculosis control, adequate medical machinery, adequate public health nursing machinery, adequate institutional provision, and an effective educational program directed against infection, morbidity, and mortality, proper legislative provision, satisfactory general sanitation, including a hygienic milk supply, and proper organization and coordination of the local health machinery.

It is interesting to note Dr. Armstrong's conclusion regarding the apparent limitations of the effectiveness of this tuberculosis program. Approximately 14 per cent of the cases will escape early detection, and 16 per cent of the active and arrested cases will die in spite of all measures for reducing the mortality. Yet tuberculosis is being brought under control in Framingham. For the decade preceding the Demonstration the corrected tuberculosis mortality was 121.5 per 100,000, for 1920 the rate was 64.5 per 100,000—a reduction of about 57 per cent brought about after four years of intensive work. For the United States

as a whole, this would mean a saving of 75,000 lives annually.

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ONE of the last acts of Congress was to curtail the appropriations of the Women's Bureau of the Federal Department of Labor. The appropriation bill passed by Congress limits the salaries of women specialists on the staff of the Women's Bureau to \$1,800. The reduction in salaries of the staff of the Women's Bureau is aggravated further by the refusal of Congress to make even the partial offset of allowing members of the staff the so-called bonus of \$240 a year, granted to other employees.

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THE experiment of West Stockbridge, Mass., in proposing to make an appropriation "to induce a doctor to settle in the town," will be watched with interest. The problem implied is a serious one. If there is not to be one more compelling motive to move from the country to the towns, medical and health service must be brought to the country.

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THE early deliberations of the conference of the American Medical Association have as their dominant note methods of educating the layman in the interest of preventive medicine, and such modification of professional ethics as will permit the physician to guide authoritatively the lively public interest in health matters.

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THE easy way in which people label everything Bolshevistic to which they are opposed frequently becomes comic. Apparently when one has no good argument he falls back on the ever ready bogey of radicalism. One of the most recent of the so-called "radical" measures is the physical education bill in Massachusetts which provides for state aid to stimulate physical education in schools. To apply the term "Bolshevistic" or "paternalistic" to a measure which provides for courses in organized play, sports, and physical exercises in schools is simply ridiculous.

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PRESS dispatches state that the maternity bill in Congress was assailed by physicians and declared to be unnecessary. Press reports also recently announced in big headlines that physicians were assailing the proposed prohibition against the prescribing of beer.

The news is misleading. It should be borne in mind that the physicians referred to do not represent the great body of the profession of the country who are unwilling to be stigmatized as the enemies of social progress.

# HEALTH IN INDUSTRY

*Official Organ of the American Association of  
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*Editors for the Association*

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## Fatigue Study a Problem in the Home<sup>\*</sup>

The "One Best Way" of Performing Work  
Applies to the Home as Well as to the Factory

BY FRANK B. GILBRETH, MEMBER S.I.E., AND L. M. GILBRETH, MEMBER S.I.E., MONTCLAIR, N. J.

THE home presents the most complicated and the most interesting of all modern problems; therefore, fatigue study is more important in the home than anywhere else. Efficient running of the home implies the art of home keeping and the science of housekeeping, and fatigue study affects both.

The home is a plant whose products are happiness and efficient citizenship. It is a restaurant, a dormitory, a school, a hospital, a gymnasium, a playground, and a factory; and in it must be solved all the problems that affect these, as well as its own peculiar problems. Just as in the industries we have gained valuable results by transferring skill and successes from one field to another, by looking for likenesses, and by utilizing the experience of others, so in the home we should look for likenesses to the industries whose work the home parallels, and transfer methods that have proved their success in the industries to this oldest yet newest of industrial fields.

### Conserve the Home

Fatigue study has proved its value in the industries. The division of unnecessary from necessary fatigue; the relief of high priced workers by assigning all but their highest priced motions to others; the introduction of rest periods; the emphasis upon the importance of working part of the

time standing and part of the time sitting; the introduction of convenient work places, chairs, and desks, correct posture and right clothing; the realization of the importance of habit,—these have all demonstrated their value in the industries.

It is our task here to show the application of these methods of fatigue study to the home.

Industrial efficiency does not necessarily mean doing away with fatigue, but rather utilizing all available energy. Home efficiency through fatigue study does not aim to eliminate all fatigue. It does eliminate *unnecessary* fatigue. Efficient housekeeping requires the expenditure of much energy. It is probable that the methods of household management can be so much improved that much energy that is now expended in the home can profitably be directed into other channels; but so long as the home exists it must have first claim on sufficient energy to create and maintain its efficiency,—and fatigue study in the home must have as its main product conserving and maintaining the home itself.

The first problem is, then, to determine exactly what are the essentials for an efficient home and to see that sufficient energy to maintain these is forthcoming. The sources of such energy are constantly changing. The human energy available is decreasing through the complications of the labor problem. But the energy available through the machinery and de-

vices at the command of the home keeper is constantly increasing. A large element of unnecessary fatigue in the home today is that caused by failure to use all such available and easily procurable home equipment.

The home has no more right than have the industries to demand of the members of the organization,—which in the case of the home are the inmates,—more energy than can be compensated for with the available rest. If such energy is demanded, or expended, the efficiency of the home must decrease exactly as does the efficiency of the plant in the industries.

### Conserve the Workers

Having determined the essentials, or the justified demands of the home, and the amount of energy that must be expended to satisfy these, we have next the assignment of the work. We find a rule that has proved practical in the industries most useful here. The high priced worker should be relieved, as far as possible, from all work except that at which he is most skilled. This means, in the home, that the bread-winner of the family should, as far as possible, be relieved absolutely of home duties, or any participation in the activities of the home, except such as he can do better than can others, or such as will furnish a rest from the activities of the bread-winning occupation. The value of this rule is usually recognized when the bread-winner is a man. Unfortunately, when the breadwinner is a

<sup>\*</sup>Presented before the Society of Industrial Engineers, Milwaukee, Wis., April 27, 1921.

woman, the importance of the same rule is usually underestimated. The wage-earning mother, daughter, or sister who contributes to the family maintenance, has a right to full efficiency for the wage-earning occupation, and should not be expected, except in an emergency, to be a member of the working force within the home. Rest and relaxation, within the home or without, during non-working hours are not only the right of the wage-earning individual, but a factor in the efficiency and best interests of the family, and should be so recognized.

Within the household, also, the more skilled members should be relieved by the less skilled wherever possible, not only as adding to the efficiency of the skilled worker, but as a method of training the unskilled.

Work periods and related rest periods, which have proved so profitable in the industries, can also profitably be used in the home. It is true that the activities of the household are so varied and extend over so many hours, that it is more often possible to arrange a schedule that will permit change of posture, exercise and rest than in the average occupation in the plant. We must remember, however, that change of occupation is not necessarily restful, and is apt to be extremely unpleasant to certain types whose "warming-up period" is long, and concentration strong. We must remember, also, that the nervous strain incident to caring for small children, the lack of opportunities for sociability and consequent relaxation; the constant necessity for rearranging and adjusting a program which must be extremely flexible,—these and other factors which may call for consideration in individual homes make a complicated problem. This is not to deprecate in the least the splendid work of individuals and of the home economics departments in the various colleges on the problem of the household. It is to bring before this group of industrial engineers the complexity of the whole problem and the need for the application of the best that engineers, psychologists, and other scientists have to give.

### Absolute Rest Essential

A certain amount of absolute rest, not only after the day's work, but during the day's work, is essential. This rest may be most easily and quickly taken reclining absolutely flat, with no pillow. A short rest period, before one is overtired, will do more than a much longer rest period when over-fatigue has actually occurred. Mental rest as well as physical rest

is essential. This latter results far more often than we think from a restful physical attitude.

We turn next to the work place and the rest place. The home should furnish a work place for every member of the household, both adults and children. Though the home is usually rather rest and recreation place than work place for the men of the household, there are individual cases where it is work place for the men as well as for the women, at least part of the time. An efficient work place need not necessarily be large, but it must furnish the essentials for the type of work to be done. Proper heat, ventilation, and lighting,—these are always essential. Equipment either in place or easily available, that there may be the least time expended to "get ready" for work and "clean up" after it; provision for proper posture, and rest and work intervals where the work is to extend over any length of time;—these are the rights of the worker in the household, as in the plant.

### The Children Have Rights

In the case of the women of the household, the home usually is the work place for many hours of every day. They have, therefore, the right to demand what the workers in an efficient plant would receive, i. e., an opportunity to produce the most output with the least expenditure of energy, and fatigue. The children, also, have the right,—a not always recognized right,—to an efficient work place both for performing their home activities and for the "home work" that is usually a supplement to the school work. The essentials for their tasks must be considered, and the means for performing them efficiently provided: a work place available and ready, equipment available and ready, quiet, and the incentive or motivation that is a part of successful work.

The rest place must receive the same attention as the work place, and must be ready and available for each member of the household. Perhaps it is not amiss to emphasize the fact here that mental as well as physical rest is needed, and that the book, the magazine or the paper that will interest and at the same time rest, each member of the household, should be as available and ready as is the chair or couch which forms part of the rest equipment.

### Provide Rest Equipment

We turn next to a consideration of this chair, which in the industries has received more attention than has any

other fatigue-eliminating device. The efficient work place for long continued operations provides for performing the work part of the time standing and part of the time sitting. This means that the user of this work place is provided with a desk, table or work bench which comes approximately to his elbows when he is standing. He is then provided with a chair which allows him to sit at the same relative height to his work bench or table. This chair should have a foot rest of appropriate height and be on casters that will allow its user to push it into place or push it aside with the least expenditure of effort and time possible. The desk can profitably be cross sectioned, the lines being four inches apart,—to be a constant reminder to study the effects on outputs and fatigue of that great source of free wealth and fatigue elimination. The arrangement of the work upon the work place furnishes another problem, but when the most satisfactory arrangement, for the time being at least, has been found, a drawing of this arrangement upon cross-sectioned paper, corresponding to the cross sections of the work place, will enable the user to maintain this arrangement. If the "One Best Way" of performing the work is kept in mind, as the goal, the improvements will follow naturally and be of permanent value.

Posture is equally important in the home and in the industry. So much has been done by the Posture League on this subject, and their literature and charts can be used to such advantage in the school and in the home, that the practical applications of eliminating fatigue through correct posture are easy. The League studies of posture at work are being supplemented with studies of posture at recreation and posture at rest, and the chair and clothing are receiving equal consideration.

### Appropriate Work Clothes

The question of clothing, so important in fatigue study in the industries, is a subject demanding special attention in the home, which is the best field for experiment along these lines, for this reason. The plant serves as social center as well as work place for many members of the community, especially for women. Consequently, it is difficult to insist that clothing appropriate for work be worn during work periods, as it is not practical that this clothing should be changed for what the workers, at least, feel is clothing appropriate for social relaxation during the rest or recreation

periods. In the home, facilities for changing are at hand, and there is no excuse for not wearing appropriate work clothes during work periods, and indulging in satisfying clothing and shoes during the rest, relaxation and recreation periods. "Appropriateness," that test for clothing, may well be supplemented by the phrase "from the fatigue standpoint." During the work period or recreation period, clothing may be appropriate and at the same time leave as its direct product giving pleasure to the wearer, for any fatigue that this clothing causes during the short period of relaxation will be more than compensated for by the satisfaction which results from its wear.

The amount of time consumed and the difficulties of putting on, adjusting, and taking off clothing is an important element in the fatigue produced. Work clothing, especially that which is adjusted and taken off at the plant, must be easily put on and taken off. Fatigue elimination can profitably be held in mind in the design of all clothing. Easily adjusted clothing for the adult is important, but not so important as easily adjusted clothing for the child. Garments that the child can put on and off himself, with the least time and with the least effort, not only mean relieving the older person from unnecessary work, but also training the child to be *deft* and finally *skilled* in his motions. This training is a valuable part of the Montessori System and much of this system can be profitably and easily carried out in the home by keeping this thought in mind when clothing is designed and made or bought.

The amount of time necessary to make, to repair, to launder and to keep in shape all kinds of clothing and shoes also requires attention.

### Stress Good Habits

Perhaps the most important element of fatigue study in the home has to do with habit. For a long time education, and lately industry, has concerned itself with the question of habit. In the old days bad habits were given the most attention, but in these days it is good habits that are stressed and their usefulness as a tool for efficiency. The home is the natural and most profitable place for habit formation. The child is in the home during the years when it is most easy to form habits and the habit of fatigue elimination, of thinking along the lines of the causes and effects of fatigue, should be started at an early age. Fatigue study is a practical thing. The theory of fatigue and its

causes: the science of measuring fatigue;—these are extremely technical and are, as yet, in the laboratory stage. But the practical application of rules for preventing unnecessary fatigue and for providing for overcoming such fatigue as must necessarily result, is simple and easy.

Fatigue study can be followed in any household where there is a willingness to undertake the work and to look facts in the face. It is not necessary to outline the process here. It is the same as it is in the industries: (1) the survey recording the present conditions; (2) the careful study of the conditions as they exist and the outline of the changes to be installed; (3) the introduction of the new standards; and (4) the most important, the maintenance of new habits after they have been formed. The greatest success, of course, will result where there is the greatest amount of co-operation among the members of the household.

It need scarcely be said to an audience like this, that the presence of an industrial engineer as a member of the household will greatly accelerate progress,—for so much, not only of the theory, but of the practice of better management that has proved successful in the industries may be transferred to the home. Process charts, progress charts, standardization, incentives, learning to think in elements of motion, the theory of tolerance, these and almost countless other methods and devices of management, well known in the industries, should become equally well known in the home. Of course, anyone, and especially perhaps the intelligent homemaker, can study the literature of management and easily transfer from that vocabulary to the home vocabulary. How much easier, however, is it when a member of the household already uses both vocabularies more or less freely, and can not only think the thought through into the new field, but apply it directly. And with such worth while results to the home and to the industry as well! For the home is not only the field *from* which our industrial workers come, but also that *to* which they go. With the proper habits of fatigue elimination in the home, the worker will go to work better prepared to work and utilize the time of rest and recreation.

### The Emotional Background

One thing more. There is an emotional factor in behavior as affected by fatigue which has as yet received little study, and which is often under-

estimated or not considered at all. Yet we all know it. It is embodied in a line of Kipling, "They shall work for an age at a sitting and never be tired at all."

We all know that it is possible to work for a long stretch and become extremely fatigued, yet apparently recover because of some emotional stimulus, like praise or some other reward. We all know that it is possible to seem to be working without fatigue, yet suddenly to experience excessive fatigue under a depressing emotional influence.

The home is the great emotional factor in the majority of lives. It is the finest experiment station in the study of the effect of the emotions upon work and fatigue.

Psychologists, psychiatrists, and physicians who are studying these problems have not as yet formulated a definite working practice for either the industry or the home. But we at least know the importance of incentive and motivation, and especially the profitable results of seeing that the reward for success is adequate and prompt.

Where industry is efficient, both reward and punishment are satisfactory, if not always satisfying. The home, however, can not only control its own incentive, but can supplement the plant by seeing that the fatigue eliminating effects of the reward are conserved, and that recovery from the fatigue causing effects of the punishment is assured.

Thus it becomes important here as elsewhere to analyze efficiency, for fatigue study in the home can not only utilize the experience of industry but can assist industry to eliminate waste, conserve energy, and add to the efficiency and happiness of the community.

### Responsible for Accidents Caused by Horse Play

Where an employee while devoting his time to his work was struck in the eye by an apple thrown by a fellow servant engaged in horseplay, the injury was held by the courts to be one "arising out of and in the course of his employment," within Workmen's Compensation Law.—*Leonbruno v. Champlain Silk Mills*, N. Y., 128 N. E. 711.

Injury by shooting compressed air in play held not one "arising out of employment within Compensation Act."—*Payne v. Industrial Commission* (Ill., 1921), 129 N. E. 122.



# Michigan Mutual Liability Company Service

Here Physical Equipment Is Precisely Adapted and Method Continuously Checked With End Result

By H. N. TORREY, M.D., SURGICAL DIRECTOR, DETROIT, MICH.

THIS statement of the surgical organization and plans of the Michigan Mutual Liability Company is presented to the readers of THE NATION'S HEALTH with the hope that it will contain something of value to others interested in the care of industrial wounded.

The Michigan Mutual Liability Company is a mutual organization of many Michigan employers, whose purpose is to cement the bond which should exist between every employer and employee. It accomplishes this by rendering service in every department, but especially in those departments responsible for the restoration of the employees to industry with the least possible suffering and the least possible delay, all of which demands the utmost in efficiency and results in the wisest economy.

This company maintains its own surgical staff both in the state of

tain points of value. It must be understood at the outset that we care for only the industrial wounded among the employees of company members who are protected under the Michigan Workmen's Compensation Act.

## State Organization

We have divided the state into zones, the extent of each zone depending upon the number of company members and employees therein. One surgeon and one ophthalmologist, ranking highest in that community, are appointed as consultants, and are called upon for special examinations and special work among our patients in that locality. Besides the consultants, local field men are appointed, and they handle the routine work, their number and location being especially adapted to the number of company risks in their locality. In most cases the manufacturers select their own field surgeon; our only condition in such a selection is that the surgeon must be competent. Many of the factories of our members are equipped with a first aid room with attendant nurse or first aid man. The following up and correlating of all this work is the duty of a surgical supervisor, and this position is of the highest importance. Over the Supervisor's desk come all reports of acci-

dents, which reports include the diagnosis and treatment of the injury, together with the name of the attending physician. The Supervisor must furnish all possible company cooperation to the attending surgeon in the care of his patient, placing at his disposal the proper equipment, proper hospital facilities, and, above all, the best consultants. The important duty of installation of various first aid stations, the selection of surgeons, the adjusting of complaints, the coordination with the Legal, Claim and Safety Departments, all belong under this head. I might add, that in practically every case, the local profession and local facilities are used in the care of our cases. However, the Company's facilities centralized in Detroit are used where such local facilities are not available.

## Detroit Organization

The city is zoned on the same basis as the state. Local surgeons are appointed to handle the routine cases in their vicinity, and their duties consist of caring for the injured employees at the various factories, and the handling of emergency cases in their district. In practically all of the larger factories first aid rooms with a nurse or proper attendant are installed, and many of these stations are equipped with Thomas splints for the trans-

### SCHEME OF ORGANIZATION OF SURGICAL SERVICE

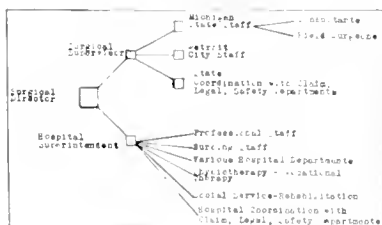


Fig. 1. A simple and practical correlation of function which leaves ample freedom to the several departments with no sacrifice of unity in the department.

Michigan and the city of Detroit and owns and operates its own hospital. The organization of the Surgical Service can best be seen by the diagram shown in Figure 1. At first glance this scheme may appear complicated, but under the conditions as we have them—the number of surgeons employed, the close coordination among the various departments, and the large number of patients handled—not only is this plan of organization simple, but it is extremely practical. In the limited space allowed this article it is impossible to discuss this comprehensive organization in detail, but it may be profitable to go over the scheme briefly and bring out cer-

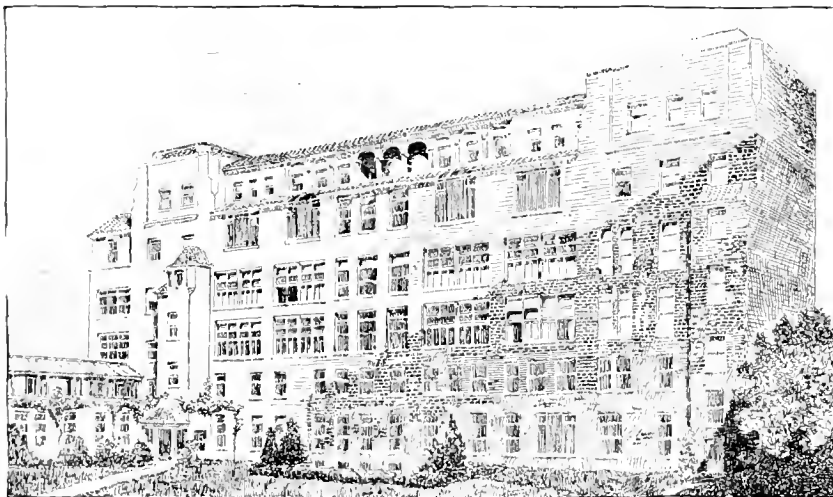


Fig. 2. North elevation of Michigan Mutual Hospital which brings together all the correlated departments essential to efficient administration. Special planning and equipment have related the whole plant to the industrial surgical field. Stratton & Snyder and Marcus R. Burrows, Associate Architects.

portation of the fracture cases. In this connection, it will be of interest to know that the company's ambulance is equipped with various emergency splints. The supervision and

experience; he must have an especially trained organization, together with the proper equipment and hospital facilities to aid him if he does his share in the conservation of our great-

us and solves one of our most perplexing questions, viz., the permanent employment of "the repeater" or the ambulatory patient who is always in our clinic, but who can do light work

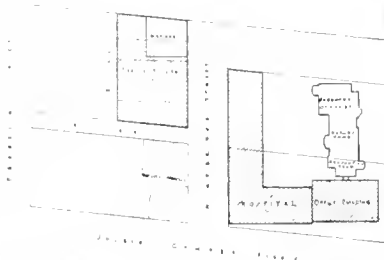


Fig. 3. The Michigan Mutual Hospital, begun as an experiment, has proved its efficiency and now brings together all correlated departments of service and administration in properly planned physical equipment.

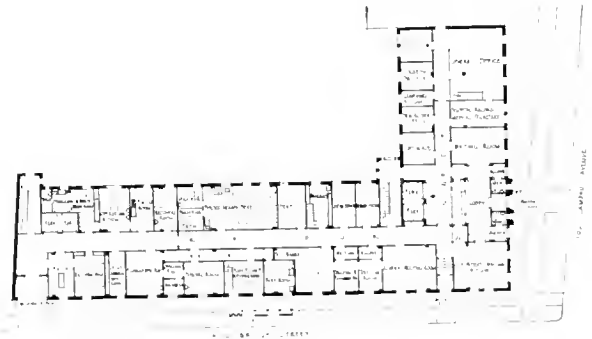


Fig. 4. The first floor houses the administrative offices and provides commodious quarters for the Out-Patient Department. The out-patients are handled with expedition and independent of the other departments.

correlation of the work of the city staff is vested in the Surgical Supervisor.

The Michigan Mutual Hospital, located in Detroit, was instituted in 1916 by this company to relieve an imperative need at that time for hospital beds. It was begun as an experiment, but rapidly became so successful from the standpoint of service, that the directors now feel it is one of the most important of the company's assets. Plans for new hospital units have been drawn up and construction will soon begin conforming with the plans presented in this article. From our experience with our own hospital and surgical staff, we feel that a company owned and operated hospital is ideal for efficiency and for handling the many special industrial problems which are not featured by general hospitals. Of course, we realize such a procedure, in many cases, is impractical and unnecessary. Some general hospitals now have industrial wards and units, and are equipped for this special work. However, we do maintain that without the proper facilities and equipment, without the proper surgical team-work, industrial surgery cannot attain that proficiency soon to be demanded of it. The layman, the community and the medical profession, are fast realizing that the conservation of the Nation's man-power is of supreme importance and that such conservation is best furthered by safety and preventive measures and by efficient and competent medical service. Industrial surgery as a specialty in the field of medicine is rapidly taking a place of great importance in this work. The industrial surgeon, like the war surgeon, must have special training and

est asset—the man-power of the Republic.

The organization of the hospital is shown in the diagram. I would call attention first to the work we are doing in physio-therapy, occupational therapy and rehabilitation. These measures cannot be too strongly recommended in the care of industrial cases. In fact, of all the lessons learned from war surgery, the development and practical application of these therapies rank among the most valuable. Such measures used in after-treatment are not only of great therapeutic value, but have a decided beneficial effect upon the mental condition of the patient. The results are quickly recognized by the layman, too, in the reduced period of disability and in lesser compensation.

Our Physiotherapy Department is one of the most active in the hospital. Thermotherapy, hydrotherapy, electrotherapy, and massage are employed, and we hope soon to add a mechanotherapy unit to the equipment. Hospital cases, ambulatory cases, and out patient cases are treated in this department.

The company's activities along occupation and vocational therapy lines consist of (a) the teaching of various practical arts to the hospital patients by a special instructor, (b) of elementary shop work for ambulatory cases, (c) advanced shop work at the various factories for the slightly disabled, (d) reeducation for other vocations, of the blind and partially disabled. Our patients are kept so busy, that they have no time to be discontented.

In this connection, I would bring to your attention an innovation which has worked out very successfully with

provided he receives any cooperation from that Czar of the factory, the Foreman. We will all concede the ideal occupational therapy shop is the shop where the patient is working. There he has his friends and there is where he is interested. How many times we have sent "John" back with a note to the foreman authorizing him to do light work and the next day or two he reappears in his old haunts with the customary explanation that the foreman said "he wasn't running a hospital." Not only does this patient get into a depressed mental state, but he becomes a trouble maker. What is more to the point, he does not recover function in one-half of the time he would with the proper exercise of the affected part. We have solved this problem by the services of a man whom we have called our "rehabilitation man." This man knows enough of the mechanical game so that the foreman will listen to him, and he also knows something of surgical injuries so the surgeon's instructions can be intelligently carried out. The repeater who can do light work is turned over to the rehabilitation man who goes with him to his foreman explaining the situation to him and obtains his cooperation. Frequent follow-ups at the shop and occasional reporting at the clinic, solve this problem, and both employee and employer reap at least a 50 per cent saving of time and money. In some cases the patient cannot return to his original work, then the rehabilitation man sees that the patient is satisfactorily placed at other work.

Our social service is chiefly concerned with investigating and remedying home conditions when necessary to the care of patients, besides following

up delinquent cases needing further treatment. Coordination and cooperation with the various other company departments, such as claim, safety, or legal departments is of paramount importance. Under our new plans, we will have the executive offices and the hospital connected as they should be to render efficient service. At the present time, representatives of the different departments are on call, and the Claim and Compensation Department keeps an office and representative at the hospital. I cannot too strongly recommend this measure as it is of great value in avoiding many misunderstandings and much delay.

Among the professional departments, I would call special attention to two, namely the dental and the neurological departments. These branches of professional service we have found to be of exceptional value in our industrial work. I need not dwell upon the great benefit derived from dentistry, both prophylactic and operative, in the care of the many cases whose convalescence is greatly influenced and complicated by teeth infections. I do not believe that the industrial clinics of this country appreciate the vast aid which can be rendered by the expert neurologist and psychiatrist in the diagnosis and treatment of many of the serious and complicated cases seen daily in any large Service. The diagnosis and treatment of the various nerve lesions, the diagnosis of mental conditions, the detection of the malinger, the reports and advice to be given the attending surgeon, the legal and claim departments—all these important problems fall clearly in the realm of such a specialist.

### Accurate Records Essential

I need not say to one engaged in this work that accurate clinical records are essential. Private case records should be kept, but industrial records *must* be kept. Residents refuse to be clerks and the records suffer. In our organization the difficulty has been solved by supplying a medical secretary, who takes dictation on operative procedures, ward rounds, and clinical records of any descrip-

tion. Now we have precise records, even including ward notes giving any important change in the patient's condition or treatment. The use of diagrams placed on the back of the physical examination and operating sheets are of aid in the descriptions of the lesions. The frequent use of photography in many cases is encouraged, as these photographs many times tell the story much more accurately than any description, and besides are of value from the scientific standpoint. A professional photographer is maintained by the company and is on call for this work.

### Out-Patient Department

The Central Out-Patient Department is located in the hospital and handles cases referred from our various out-patient departments in the city and also certain cases discharged from the hospital. The out-patient surgeon and eye specialist are supplied with the necessary secretarial and nursing service. Owing to the large number of cases handled by this Department we have developed a record card which, while not as voluminous as some, is of very practical value. Three copies of this card are made at the patient's first visit, giving diagnosis, treatment, and limit of disability. One copy remains in the Out-Patient files, one is sent to the Claim Department, and the other in the follow-up files arranged under the date of the patient's return. If the patient does not return on the date indicated, his card is automatically turned to the Social Service Department and the case is investigated. The back of the record card is ruled in squares, each square indicating one day, and arranged in weeks and months. Treatments are indicated by the surgeon's initials, details if necessary, put in blank space arranged for same. Limit of disability is designated by a red "D" on the date esti-

mated and such date is extended or not as the case progresses. Referring to other departments is likewise indicated by initials of same under the proper date.

Follow-up Clinics are held weekly at the hospital, the entire surgical staff and representatives of the various departments of the company attending. All ambulatory cases under observation are seen at this time, the examinations made and recorded and the necessary recommendations made. At this time various cases referred by the Detroit and state staff or by the Claim Department, are seen, records and recommendations made and copy of same is sent to the department or surgeon referring the case.

Owing to the large number and severity of our fracture cases, one floor of the hospital is devoted to their special care. I cannot lay too much stress upon the great importance of having the proper equipment for the handling of these cases. Our results with the various traction methods, utilizing, wherever possible, the Balkan frames, have been especially gratifying. X-ray follow-ups weekly are essential to the proper and intelligent after-care of major fractures. The equipment of our city first aid stations and our ambulance with Thomas splints has done much to cut down the number of compound fractures received.

Another exceedingly important factor in our work is the Safety Department maintained by the Michigan Mutual Liability Company. The Company realizes the enormous value of preventive measures and has made every endeavor to bring this department up to the highest efficiency.

### New Hospital Plans

These plans were drawn with the one idea of handling industrial cases, efficiently, quickly, and economically. Attention is directed to the general

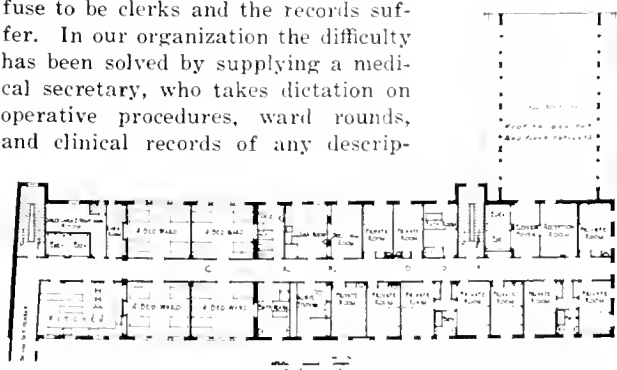


Fig. 5. Fracture injuries, constituting so important a phase of industrial surgery, has been given the entire second floor with such facilities as will reduce the work and assure better end results for all concerned.

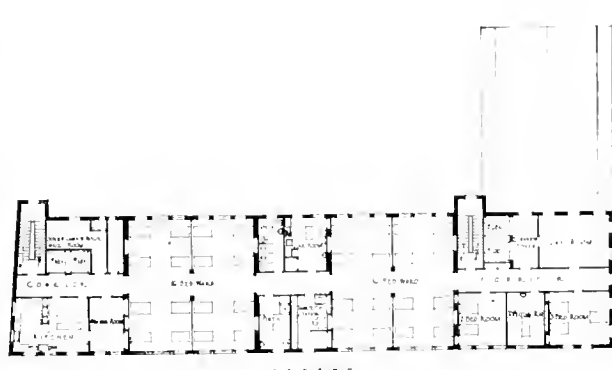


Fig. 6. The third and fourth floors are devoted to ambulatory hospital patients, who are separate from the hospital proper, an arrangement greatly to the advantage of the convalescent patients.

scheme, which shows the various units so arranged as to give the closest cooperation between the executive offices, the hospital, and the various departments. This close cooperation between the central offices of the company and the hospital is not only of great importance, but is absolutely essential.

In regard to the Hospital Building proper, it will be six stories and will

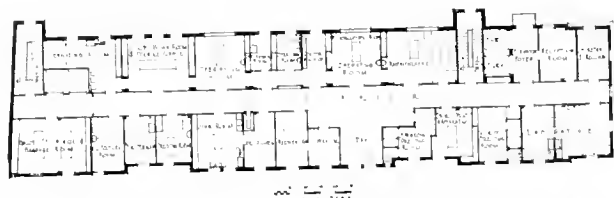


Fig. 7. The operating suite with related departments are housed in juxtaposition on the fifth floor. Too much stress cannot be laid upon the proper equipment and the suitable relation between the units.

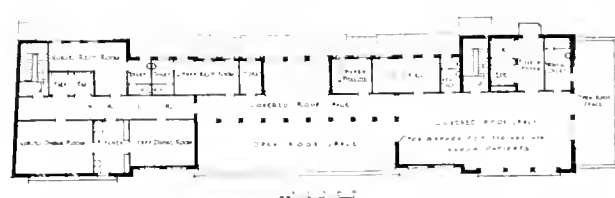


Fig. 8. The necessary dining rooms, rest rooms, and open and closed roof space afford easily and without sacrifice of line, the necessary privacy and rest for the personnel of the working staff.

contain one hundred beds. The general scheme is as follows:

**Basement.**—Storage, vocational shops, etc.

**First Floor.**—Administration, together with a large out-patient department. The **second floor** will be equipped for fractures and serious cases,—the third and fourth ward floors for ambulatory patients. The **fifth floor** will house the operating room, and the **sixth** the staff and nurses' dining and rest rooms, together with large open and covered

hospital building, and the passenger service in the front. A special effort was made to perfect the Outdoor Department, and to connect it closely with the hospital proper, while at the same time separated enough to eliminate the various objectionable features of too close proximity. All out-patient services, including an operating suite, are distinct from the main hospital, yet at the same time such general departments as the x-ray department and physiotherapy are so located that they may be easily utilized both

by ambulatory and by hospital cases. This, as can readily be seen, obviates the necessity of admittance of ambulatory cases to the hospital proper. In the wards, movable low partitions give the patient privacy, and at the same time do not interfere with economical administration or with ventilation or light. The kitchen, laundry and all the general service functions are housed in a separate

building, with free communication by tunnel and bridge between the various buildings. Naturally in the scope of such a paper as this, it is impossible to go into any great detail. We hope, however, that perhaps others interested may find some points of value. We feel that medical service to the industries is a very important subject, and that more and more will be demanded in the line of better service, and we are doing our best to be ready to meet it.

## Secretary's Page

FRANCIS D. PATTERSON, M.D.

In the matter of industrial and dental dispensaries it has heretofore been impossible to compile anything like an adequate list of the firms who maintain industrial dental dispensaries, and an investigation has been undertaken to this end by means of a questionnaire sent out to every member of the American Association of Industrial Physicians and Surgeons. Full cooperation on the part of the membership should result in bringing together data of the greatest value both in the measure of good service and in the interest of extensions of the services maintained as integral parts of medicine in industry. The questionnaire follows:

### Industrial Dental Dispensaries

After supplying the information requested by the following questions kindly mail this form to Dr. Francis D. Patterson, Chief, Division of Industrial Hygiene and Engineering,

Third and North Streets, Harrisburg, Pa.

Name of Plant .....  
 Location of Plant—Street .....  
 City ..... State .....  
 Number of Employees in Plant .....  
 Number of Employees Using Dental Dispensary .....  
 Cost of Original Equipment .....  
 Number of Units in Dispensary .....  
 Cost of Dispensary per Year per Patient .....  
 Cost of Dispensary Borne by Company .....  
 Cost of Dispensary Borne by Employees .....  
 Cost of Dispensary Borne by Employer and Employees Together...  
 How is Cost Divided?  
 Employer .....  
 Employees .....  
 Kind of Treatment Given?  
 Examination .....  
 Cleaning .....  
 Radiographic .....  
 Emergency .....  
 Operative, not Emergency .....  
 Number of dentists in dispensary?  
 Full time .....  
 Part time .....  
 Number of assistants in dispensary?  
 Nurses .....  
 Attendants .....  
 Clerks .....  
 Do you consider the installation and operation of your dental dispensary a success?.....

This questionnaire is filled out by  
 Name .....  
 Title .....  
 Date .....

### Steel Workers' Sickness

Statistics of sickness covering one week or more among members of the Sick Benefit Association of a large Pennsylvania steel company for two years ending in July, as compiled by D. K. Brundage, for the United States Public Health Service, show somewhat surprising results. Respiratory disease, such as influenza, grippe, and pneumonia, account for 50 per cent of all cases; bronchitis, pleurisy, and tuberculosis add 11 per cent more; rupture and infection together, 4 per cent, excluding occupational infected wounds; general debility applied to men no longer able to work in the mills, 1.5 per cent. The average age of these men was 68; their employment had lasted an average of forty years. The high incidence of respiratory diseases calls for a more definite application of hygienic air conditioning as well as fatigue and other studies in the steel working trades.

# Causes of Work Accidents Among Women

Prevention Implies a Proper Correlation of Causes  
Whether the Work or the Worker Is at Fault

BY NELLE SWARTZ, CHIEF, BUREAU OF WOMEN IN INDUSTRY, NEW YORK STATE DEPARTMENT OF LABOR

"WE MUST make the workplace fool-proof," is a time-worn saying of safety engineers. They have learned from experience that accidents occur not when workers are alert and careful, but when attention has wandered, or when fatigue has set in.

Accidents may be due to mechanical, physiological or psychological causes.

Safety engineers generally agree that safety devices can be made to prevent from 25 to 33 per cent of industrial accidents; so that while mechanical appliances play an essential part in accident prevention, it is not the largest part.

## Human Factor Variable

In discussing work accidents and their causes, we are too much accustomed to dwell upon the concrete objects of danger, such as unguarded machinery, unlighted halls, and the like. Besides all these external factors and their effects, we must reckon with the human subject himself, and the reason why among so many ever-present chances of danger, so many escape.

The Bureau of Women in Industry of the New York State Department of Labor undertook a study of work accidents among women with the hope that some light could be thrown on the subject of accident prevention among women, to enable the subject to be approached with more understanding. One thousand compensated accident cases for women were studied, through the courtesy of the

Bureau of Compensation, covering the period from June 1, 1917, to June 1, 1918.

There are, of course, certain limitations in a study based on compensation records. For example, a statement as to the time the accident occurred may vary considerably, since there is the testimony of the employer, the employee, and the doctor.

## YOUTHFUL WORKERS PAY HIGHEST TOLL OF ACCIDENTS

10% WERE  
UNDER 21  
YEARS OF AGE

32% WERE  
BETWEEN  
21 AND 31  
YEARS OF AGE

The inordinate penalty paid in accidents by the inexperienced worker but serves to emphasize society's responsibility toward the untrained.

In answer to the question of how the accident happened, the employer often charges carelessness of the operator, and the employee, on the other hand, charges carelessness of the employer. These limitations understood, compensation records have decided merits. Besides the cause of the accident and the kind of injury sustained by the worker, it is possible to follow the development of the injury and to note the disability features.

In consideration of the woman worker, both her mental and her physical characteristics are involved. Inability to understand the English language can easily be seen to be productive of accidents, although inability to speak English was found in a little less than one-tenth of the cases in this study. It is interesting to note that the percentages in and about New York City and upstate were practically the same. The clothing

industry in New York City showed a larger proportion of foreign speaking women workers injured than any other. The textile industry upstate had the next highest percentage. In conclusion, it must be said, however, that for light on the industrial accidents studied by the Bureau, one must look further than to mere lack of word intercourse.

## Experience a Factor

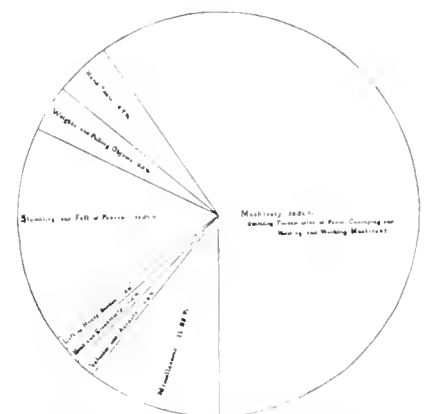
Length of service of the worker is an important factor in women's work accidents. Of the accidents studied, 18 per cent of the women had been with their employers less than a month, about 50 per cent less than six months, and about 63 per cent less than a year. This indicates the close relationship between accidents and labor turnover and the value of accident prevention through administration which tends to stabilize the working force.

Lack of training undoubtedly entered into this group of accidents. It is an odd commentary on the efficiency of industry that so little scientific attention has been given to the task of adequately training the worker for her job.

Our responsibility for women's accidents is doubly great, because it is

## THE CAUSES OF WORK ACCIDENTS AMONG WOMEN

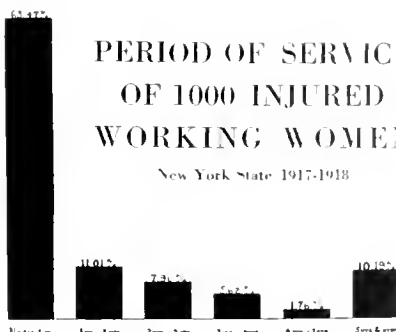
New York State 1917-1918



Mechanical causes have been traced, but physiological and psychological elements need to be correlated before we can postulate the real underlying causes of accidents.

## PERIOD OF SERVICE OF 1000 INJURED WORKING WOMEN

New York State 1917-1918



The degree of protection afforded by the precision and quick reaction time in fully adapted operators is shown by the comparative periods of service of injured workers.

the young woman who pays the highest toll. Almost half of the women were less than 21 years of age, with 60 per cent not more than 25 years of age.

Great emphasis has always been placed on women's clothing as a source of accidents. As a matter of fact, only about 2 per cent of the accidents were traced directly to clothing. In three cases, the hair of the women caught. In two other instances, the hands of the workers were drawn in, because of the gloves worn. High heels worn by women are no doubt a contributing factor toward the number of stumbling and falling accidents, and such accidents ranked second to those caused by machines.

In industry, it makes very little difference if a man is married or not married, but with women marriage is bound to be a complicating factor. Superimposed upon the fatigue from factory work, comes the burden of domestic tasks, much heavier than those of unmarried women. With this in mind, it is significant that 28 per cent of accidents fell to married women, who composed but 10 per cent of the total number. The figures indicate, therefore, that more married women are injured in proportion to the number employed than single women. Fatigue is bound to play an important part where the woman is both the bread winner and the home maker.

Almost 90 per cent of the injured working women were receiving less than fifteen dollars a week. The youth and lack of experience of the workers account in part for the smallness of remuneration, but even in this war period, when wages were at their highest peak, less than 1 per cent received twenty-five dollars or more a week, and more than half were receiving less than ten dollars a week.

Women to the extent of about 10 per cent were not actually at work, in the narrow sense of the word, when their injuries were inflicted. They were going to or from their benches or machines to the dressing room, or to and from their work for the day, along staircases or halls. In studying the source of accidents, the most striking fact that stands out is that the greatest number occurred in connection with machinery. This is due in part to the fact that during the war, large numbers of women for the first time were doing machine work. The metal industries led in the larger proportion of machine accidents, with the astonishing peril of presses. The accident rate among women press operators is considerably higher than

among men, according to a comparatively recent Federal report.

Upon the sewing machine must be placed the responsibility for machine accidents in the clothing industry. This may seem astonishing to the lay mind, which recalls no accident at any time in connection with the sewing machine at home, but the factory power machine, setting about four thousand stitches a minute, is a different thing from the domestic species. With such speed, the operator ceases to see the needle, and a flash of white light takes its place. While needle injuries are not apt to be serious, the danger comes from lack of care and consequent infection.

The machine that stands out prominently in the paper industry is the corner stayer.

The machines that reap the heaviest toll in the textile industry are the loom, the knitting machine, and the draw frame.

### Certain Injuries Obscure

From the records, the lifting of heavy burdens caused a smaller number of injuries among the thousand women's accidents than was expected—less than 1 per cent. Physicians claim that accident statistics on this subject cannot be taken too seriously, however, since it is often difficult to trace injuries to this source, and such injuries are very often slow in developing. Employers for the most part have done a great deal to prevent injuries from heavy lifting, by providing pulleys and tackle, but a type of heavy burden that escapes any serious thought is the lifting of piles of finished goods. This type of lifting is common enough, for example, in department stores, and clothing factories. Here no single article is particularly heavy, yet by thoughtless heaping, the weight may become a hazardous element.

Stumbling and falling accidents were second only to machine accidents, forming about 17 per cent of the whole. Why do people stumble and fall? Poor lighting of halls, or bad construction of staircases; obstacles, like piles of goods; or floors wet from spilled hot starch; or even, as in one case, a recently scrubbed floor, which had not been done early enough to allow the water to dry. All these are direct causes; of indirect causes, such as fatigue, we can only guess. Certain it is that we all stumble and fall more when we are tired.

The part of the body hurt, and the type of injury inflicted, indicate something of the degree of severity. Of the parts of the body injured, the

thumbs and fingers seem to be far in the lead.

The majority of thumb and finger injuries came from machines. Of the arm and hand injuries, about one-half came from machines.

Of the leg and foot injuries, one-half came from stumbling or falling.

Of the trunk injuries, practically two-thirds came from stumbling and falling.

Of the head and neck injuries, almost a third came from machines. The rest were scattered in origin.

Almost half of the injuries were cuts, punctures, or lacerations, and most of the disabilities of all types were merely temporary. The time element is a means of indicating the seriousness of the injury. This element, on the whole, was low, but it may be much understated. According to the records, about half of the disabilities were of less than six weeks duration.

Full justice would not be done to a study of this kind without some personal interviews with the women workers themselves. One hundred such interviews were held by the Bureau, and the human story of the industrial accident was told. One-half of the girls pronounced themselves unable to return to work when their compensation period was over. While personal prejudices may have biased the opinions, so large a number would indicate that some had not been able to return to work. Physical disability was not the only thing which kept the injured worker from getting back to work. Some could not find employment, when they were able to work. Changes to different kinds of work were made by some whose accidents had made them afraid to go back to their old jobs. The chief criticism these women made of the New York compensation law as it stands, was the two weeks' waiting period before compensation began. In many instances, this entailed great hardship.

### Who Suffers Most?

In the final analysis, who is the woman suffering from work accidents? (1) The one who is young—under twenty-five years of age, who is untrained, unskilled, and at the lowest rung of the wage ladder. Her injuries, so far as is known, are minor injuries, and she receives compensation for a comparatively short time.

But this does not tell the whole story. In a study of accident causation, much more is unknown than known. We have considered for the most part only the concrete causes. The whole physiological and psycho-



logical field remains open for investigation. If we are to reduce considerably the numbers of the maimed and crippled, if we are to eliminate that bugaboo of the workers,—fear; if we are to give some degree of freedom to the human agent apart from the machine, we must consider carefully these causes. Side by side with perfection of mechanism and safety appliances should go the study of those underlying physiological and psycho-

logical factors which so largely contribute to swell the accident rate, and which, when better understood, may be modified, if not obliterated, by the provision of periodic rest periods, reduction of hours for work, change of processes during the day, and similar devices to check the inroads of fatigue.

We cannot get away from the intricacies of modern industrial development; we cannot get away from

the speed of processes or the pace of machines, but we can prevent the never ending cycle of waste before remedy, destruction before attention.

The best guarantee of safety in a plant is a group of careful and alert workers. Carefulness and alertness, like other assets, can be had only at a price.

This price is an absence of fear, and of fatigue, and the recognition of a policy which sets life above dollars.

## What Constitutes Industrial Blindness\*

By EDWARD STIEREN, M.D., OPHTHALMIC SURGEON, JONES & LAUGHLIN STEEL CO. AND P. & L. E. R. R., CO., PITTSBURGH, PA.

**A**N OBJECT one centimeter in size, placed one meter distant from a normal emmetropic eye is plainly visible. If this object is moved farther and farther away, it forms a progressively smaller visual angle, until a point is reached beyond which it cannot be perceived, owing to the diminutive size of the visual angle. The limit of perception has now been reached.

The angle which the object subtends at this distance from the eye represents the maximum acuteness of vision. An object twice the size would be seen distinctly at twice this distance. An object one-half the size could not be distinctly seen at more than half this distance.

On this scientific basis Snellen constructed his test-types which are in universal use in recording the acuity of vision. He determined the normal acuteness of vision to be the power of distinguishing letters subtending an angle of 5'. These letters are formed of strokes whose width is one-fifth the size of each letter; consequently they are seen under an angle of only 1'.

### Tests of Visual Acuity

In recording the visual acuity of a patient, he should be seated twenty feet from the test-type, which should be well illuminated, and the vision of each eye tested separately by occluding the other eye.

The acuteness of vision is found by determining the smallest type which can be read and the result is recorded by writing down a fraction, the numerator being the distance the patient is seated from the chart and the denominator the line read. Thus, if a person seated twenty feet from

the test-type reads the line that should be read at twenty feet by an emmetropic eye, his visual acuity is recorded 20 over 20 (20/20) or normal. Should he be able only to read the thirty-foot line, the visual acuity is recorded 20 over 30 (20/30). Should the eye be so defective that he can discern only the large letters intended to be read at 200 feet, his visual acuity is recorded 20 over 200 (20/200).

As stated above, this is the method employed by ophthalmologists in all parts of the civilized world. It is an

international method of recording acuity of vision, simply this and nothing more, and it is to be much regretted that the erroneous idea that these figures when reduced to simple fractions represent loss of vision, obtains in a greater or less degree. That is to say, a few, not having given the matter sufficient thought, will say that a man whose visual acuity is recorded 20/30 has but two-thirds normal vision; 20/40 in their minds can be reduced to  $\frac{1}{2}$  and represents only one-half normal visual acuity, etc., etc.

**P L R B T A E**

Fig. 1. If type of this size can be read at twenty feet by an emmetropic eye, the visual acuity is rated as normal.

Such conclusions are absolutely wrong and misleading, and I am sure, were Snellen alive today, he would be much chagrined at having his efforts so badly misconstrued.

A table of percentages of vision has been compiled by Dr. V. A. Chapman of Milwaukee, which has been pronounced mathematically correct by expert mathematicians. The principle of this table is to allow  $\frac{1}{2}$  per cent loss of vision for each loss of one

foot distance, which equals 5 per cent for each loss of ten feet distance. Computed in this manner, it is a simple matter to arrive at the percentage of vision loss, since the standard Snellen test-type are made with each progressively larger line representing ten feet more loss of visual acuity. Normal visual acuity is represented by 20/20, which means that type of the size shown in Figure 2 is plainly visible at a distance of twenty feet. If at this distance type of the size shown in Figure 1 cannot be seen, the vision is represented as 20/220, which

is to be interpreted as a total loss of vision.

The table works out as follows:

PERCENTAGE OF VISION LOSS		
Vision of	% Loss of	Vision
20/20	0	0
20/30	5	5
20/40	10	10
20/50	15	15
20/60	20	20
20/70	25	25
20/80	30	30
20/90	35	35
20/100	40	40
20/110	45	45
20/120	50	50
20/130	55	55
20/140	60	60
20/150	65	65
20/160	70	70
20/170	75	75
20/180	80	80
20/190	85	85
20/200	90	90
20/210	95	95
20/220	100	100

We have in this table a percentage of visual losses ranging from normal vision, which for decades has been established at 20/20, to vision of 20/200, or industrial blindness.

By the latter is meant that an eye which is incapable of reading the 220-foot line at 20 feet is blind in the

\*Read before the Twelfth Conference of Industrial Physicians and Surgeons of Pennsylvania, Pittsburgh, April 15, 1921.

sense that it is not fit to do any kind of work. This is not total blindness—which implies the absence of light perception—and the possessor of such poor vision can still see enough to be able to get about.

In an industrial sense, compensation is payment for the economic loss to a person in consequence of damages to the functions of any part of the body from injury.

There may be no loss at all following an industrial accident, the injured member recovering its function completely; or there may be partial

compensation Act in Pennsylvania, for the loss of an eye or loss of working vision in an eye, a maximum of twelve dollars per week for one hundred and twenty-five weeks is allowed. It would seem a most equitable adjustment to apply the above percentage table in all cases of partial loss of vision and award damages accordingly.

#### Compensation for Visual Loss

For instance, vision by an industrial accident has been reduced to 20/100; the claimant would therefore

further, counsel for the Minimum Wage Board of the District of Columbia, and Mary W. Dewson, research secretary of the National Consumers' League. This volume sums up the argument for the Minimum Wage Board of the District of Columbia under four points:

(1) The presumption to be accorded an Act of Congress, which demands that it be respected unless transgression of the Constitution is shown "beyond a rational doubt," amply sustains the District of Columbia Minimum Wage Law, particularly in view of the circumstances of its enactment.

(2) Congress, by this legislation, aimed at "ends" that are "legitimate and within the scope of the Constitution."

(3) The "means" selected by Congress are "appropriate and plainly adapted" to accomplish these "ends."

(4) No right of the plaintiff's secured under the Constitution "prohibits" the use of these appropriate means so adopted by Congress to accomplish these legitimate ends.

In addition to the points of argument, material is presented on the successful working of Minimum Wage Laws, the extension of Minimum Wage Legislation and the need for Minimum Wage Legislation in the United States. This last section includes particularly valuable material on the wages of women and the cost of living.

#### Industrial Dental Clinics Organized

In a way, industrial dental clinics offer a more promising field for the securing of clinical facts and figures than can be secured by hospitals or dispensaries because as a rule patients are under observation for a longer period of time. Most of the corporations starting dental clinics have already reorganized medical departments which can and do cooperate with the dental work. Records kept should include both dental and medical findings. The purpose and scope of the dental clinic should be primarily educational work among employees; preventive dentistry rather than reparative work; prophylactic treatments, examinations, and x-rays, which properly belong to the preventive and educational branches. Employees should go to outside dentists for reparative work of all kinds, according to a paper read by Thaddeus P. Hyatt before the National Dental Association in Boston. The clinic acts as a time and money saver to the dentist. An industrial medical department is incomplete without a dental clinic.

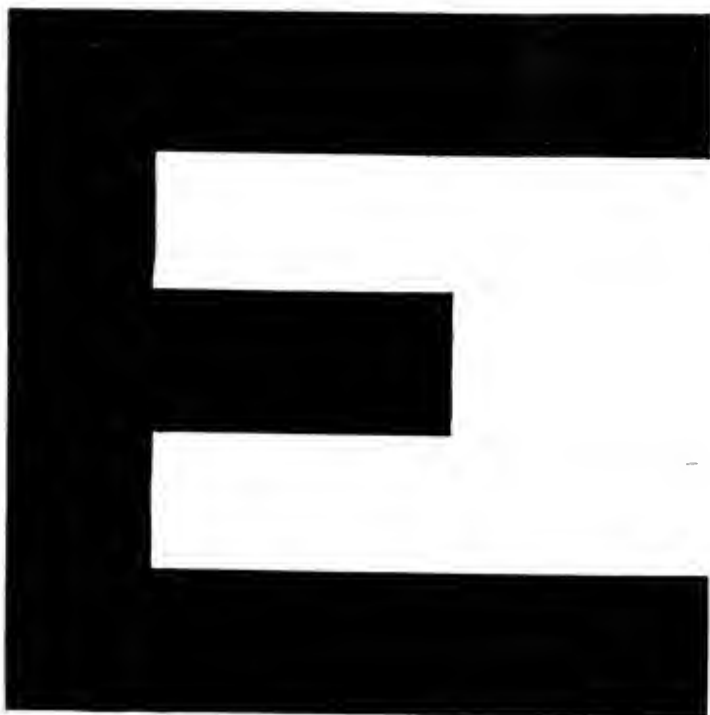


Fig. 2. The inability to see type of this size at a distance of twenty feet constitutes industrial blindness. This letter is normally visible at a distance of 220 feet.

loss of function and incomplete recovery; or there may be total loss of function. Partial loss occurs somewhere between no loss at all and a total loss of function.

Under the present Workmen's Com-

receive compensation based on 40 per cent of the amount recoverable had he lost the eye, or industrial use of the eye, namely 40 per cent of \$12.00, or \$4.80 per week for 124 weeks, or \$600.

## Minimum Wage Laws in Court

THE minimum wage law of the state of Wisconsin has been upheld as constitutional as a result of a test case brought against the Industrial Commission of Wisconsin by one of the leading hotels.

The case for constitutionality of the Minimum Wage Law of the District of Columbia is now pending. The case against this Minimum Wage Commission was brought because of

the order of the Commission providing that, subject to certain qualifications, "no person . . . or corporation shall employ a woman . . . in any hotel . . . or in any hospital at a rate of wages of less than 34½ cents an hour, \$16.50 per week, or \$71.50 per month."

The most significant material on wages published for some time is the brief of some 500 pages on Minimum Wage Laws prepared by Felix Frank-

# California Labor Camp Code

**I**N ORDER to advise owners and operators of labor camps of the requirements fixed by the Labor Camp Sanitation Act, and the Commission of Immigration and Housing in the application of that Act, a bulletin of information has been issued setting forth the minimum requirements which must be provided:

(1) Camps should be located on well-drained ground.

(2) An adequate supply of pure drinking water must be provided. (Statutes 1915.) Barrels or tanks containing water should be cleaned out at frequent intervals. Water should be drawn from barrels or tanks by a faucet. Whenever possible, drinking fountains should be installed.

(3) Sleeping quarters (tents or houses) should be arranged in rows with adequate spaces between.

(4) Toilets should be at least 75 feet from sleeping quarters. The openings of the toilet structures must be either battened or screened and the structure made as fly-proof as possible by automatic drop-seat covers. Lime or ashes should be sprinkled in the pit every day.

(5) Toilet must not be located over streams or canals.

(6) Wherever possible, stables and corrals should be located at least six hundred feet from the living quarters. The direction of the prevailing winds should be considered when the location for corrals and stables is chosen. Manure should be disposed of daily either by hauling it into the field and spreading it in thin layers on the land, or by placing it in flyproof composting pits, or by burning.

(7) Bunkhouses, tents or other sleeping quarters must be provided. Sleeping quarters should have between four and five hundred cubic feet of air space for each occupant. Sleeping quarters (houses or tents) must be in good structural condition. Tents or houses which are in bad repair can not be used as sleeping quarters. Whenever practicable, sleeping quarters should be screened so as to keep out mosquitoes and flies.

(8) Whenever a camp is located on damp ground or when a camp operates in winter, floors must be provided in tents or houses used as sleeping quarters.

(9) Bunks or beds must be furnished to all employees. The bunks or beds must be of steel, canvas or other sanitary material. They must be so constructed as to afford reasonable comfort to the occupants. Where straw is used, a container or tick should be provided.

(10) Tents or houses used as cooking or dining quarters must have all openings screened and doors should have spring hinges to close automatically.

(11) All drainage from kitchen sink must be run through a covered drain to a covered cesspool or septic tank or otherwise disposed of in such

a way as not to become offensive or insanitary.

(12) Garbage and refuse must be kept in fly-proof, covered containers and disposed of at intervals by incineration or by burying or by feeding to hogs. Hogs should not be allowed to roam at large in camp. They should be kept in pens at least 200 yards from living quarters (wherever location will permit). The direction of the prevailing winds should be considered when the location for hog pens is chosen.

(13) There must be an adequate number of toilets, affording one seat for every fifteen persons. There must be separate toilets for men and women, marked "Men," "Women."

(14) In all ranches (hop, fruit or berry), where people work in the fields throughout the day, there should be a few portable toilets. The openings of the toilet structures must be either battened or screened and the structure made as fly-proof as possible by automatic drop-seat covers. Lime or ashes should be sprinkled in the pit every day.

(15) Bathing facilities must be provided at all camps. The use of showers is advised, as they are more sanitary and also cheaper to construct and will accommodate more people. One shower head for every fifteen people should be provided.

(16) Interior of dining and sleeping quarters, bathrooms and toilets

must be kept in a clean and sanitary manner. The grounds around the camp must be kept free from filth and accumulation of rubbish, etc.

(17) At every camp the owner, superintendent or overseer, shall appoint a responsible person to assist in keeping the camp clean.

(18) Section 6 of the act regulating sanitation and ventilation in labor camps reads:

"It shall be the duty of any person, firm or corporation or agent or officer of a firm or corporation employing persons to work in or at camps to which the provisions of this act apply and the superintendents or overseer in charge of this work in or at such camps to carry out the provisions of this act. At every such camp such owner, superintendent, or overseer shall appoint a responsible person to assist in keeping the camp clean."

(19) Section 8 of the act regulating sanitation and ventilation in labor camps reads:

"Any person, firm, corporation, agent, or officer of a firm or corporation, or any superintendent or overseer in charge of the work in or at any camp coming under the provisions of this act, who shall violate or fail to comply with the provisions of this act is guilty of a misdemeanor, and shall upon conviction thereof, be punished by a fine of not more than two hundred dollars, or by imprisonment of not more than sixty days, or by both such fine and imprisonment." (Statutes of 1913, page 328; amended 1915, page 497 and 1919, page 244.)

## Committee Studies the Health of Working Children

Owen R. Lovejoy, the general secretary of the National Child Labor Committee, announces in the forthcoming issue of the *American Child* the beginning of a novel and extensive study of the health of working children. This study is being made in the continuation schools of Newark, N. J., with the cooperation of the Department of Medical School Inspection.

Twelve hundred boys and girls employed in the various industries of the city and attending the continuation schools several hours a week will be examined by a corps of doctors and nurses under the direction of Dr. H. H. Mitchell, health specialist of the National Committee. Their physical condition will be compared with what it was when they received their working papers. A correlation will be made between the occupations in which the children engage and their health records while at work.

The object of the study, according to Dr. Mitchell, is to obtain reliable scientific data on which to base conclusions regarding the need of some form of health protection and service

for boys and girls who have left the regular schools and gone to work, as well as to throw additional light on the question of whether the minimum age for entering industrial employment should be raised from fourteen, which is the age established by law in most of the states, to sixteen, which was recommended by the Children's Bureau Conference on Child Welfare Standards in 1919.

"The vast majority of juvenile workers in industry," says Dr. Mitchell, "are between fourteen and sixteen years of age. This, generally speaking, is the period of early adolescence, a critical period from both the physiological and the psychological standpoint. Only seventeen states now require the physical examination of applicants for working papers, and no state sees that working children are periodically examined to learn what effect their employment is having on their health or to afford opportunity for the correction of defects or dangerous tendencies."

The need for a scientific approach from the standpoint of the physical effects of industrial life upon children is a fair and just challenge which cannot be ignored in our welfare programs.

# INSTITUTIONAL HEALTH

*The Health Problems of Schools and Colleges, Hotels, Summer Camps, Children's Homes and Homes for Dependents*

## Training at St. John's Military Academy Resiliency of Physique Finds Its Counterpart in Mental and Moral Fiber

BY MAJOR ROY F. FARRAND, COMMANDANT, THE ST. JOHN'S MILITARY ACADEMY, DELAFIELD, WIS.

FOR more than a quarter of a century before the war there were here and there about this great land of ours, voices crying in the wilderness to the effect that the ideal training for American youth was military training; that it would make for the physical well being of the race, that it would promote mental alertness; that it would permeate the fiber of our complex American life with a certain virility; that it would give our young males that *savoir-faire* which insures the ability to live a man's life among men; and that, while endowing them with the qualifications, mental and physical, for making a success among the pursuits of peace, it would at the same time be building for the Nation a reserve of man-power of officer fiber, which in the event of war might be called upon to play equally well its part in the grim business of war.

### One Man Acts

In the sleepy little village of Delafield, Wis., some thirty-seven years ago, such a prophet raised his voice, but, unlike the prophets of old, he was a man of deeds, as well as of words. He not only cried aloud to all and sundry of the great benefit of military training to our youth, but he set about proving the truth of his own theorizing. Amid the quiet, pastoral scenes of that little Wisconsin village, he breathed the breath of life into an institution which was destined at a later date to merit the thanks of a Nation, though in founding St. John's Military Academy, it is doubtful if Sidney T. Smythe more than vaguely

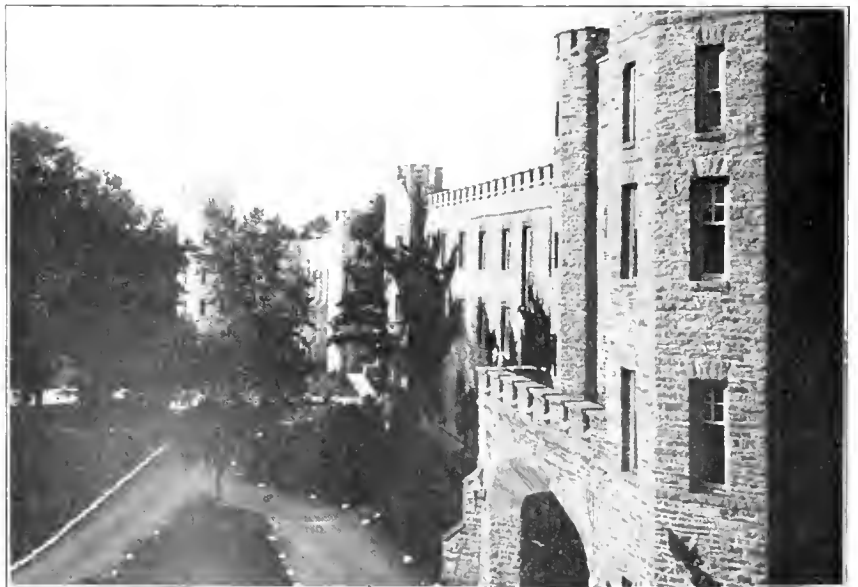
dreamed of the contribution he was making to the winning of the greatest war of history.

For many years before the war St. John's was recognized as one of the leading preparatory schools for boys in the land. Its students came from all the states, from Canada, from Mexico, and from distant India, China, and South America, while its graduates were building bridges in Africa, manufacturing shoes in Oshkosh, chasing Ladrone in the Philippines, practicing law in Kokomo, farming in Oklahoma, or otherwise contributing to the world's industry and the world's progress. They were

proving the soundness of their mentor's theories as applied to the pursuits of peace.

Then came the war. Then came the final proof of the soundness of St. John's training. By hundreds, its alumni flocked to the colors. Something more than 20 per cent of the male graduates, of a neighboring university, entered the service—nearer 70 per cent of the alumni of St. John's were carried on the rolls of their Country's fighting regiments. Over 50 per cent were commissioned officers, the balance for the most part being barred because of their youth.

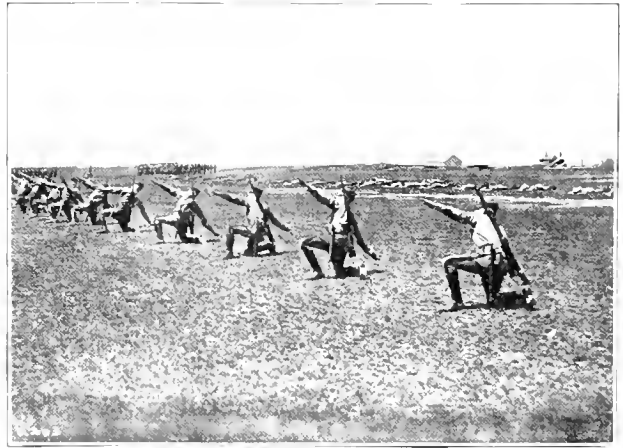
For the most part, these men were



The east front of the Quadrangle of St. John's Military Academy. Built in militant English Gothic style, the environmental stimulus is appropriate to the mental and physical disciplinary régime of the cadets.



At bayonet practice, "Long Point."



Learning to throw the deadly hand grenade.

volunteers. They did not wait for the draft. They had not been trained to wait. They had been trained to *do*, and how much America owes to them for the training of the first levies of its great draft army, none but the organizers of those first training camps will ever know. With hundreds of thousands of unequipped, untrained and awkward recruits bearing down upon them, their cry was "Where will we get the trained and intelligent drillmasters to *teach* these men"? And in every camp the graduates of St. John's made answer: "We can do the work—take us." In one great National Guard encampment, a St. John's cadet, eighteen years of age and not yet graduated, was brevetted a Lieutenant Colonel, and made senior instructor in close order drill.

Thus has St. John's justified its existence. Thus has it proved the soundness of its founder's theories, and the clearness of his vision. And today, with the war over, and our citizens again falling into the lethargy of unpreparedness, and listening to the siren voice of pacifism and disarmament, St. John's is quietly and busily

going about the training of more useful citizens, every one of whom is a potential soldier.

It is an inspiration to the average citizen to visit St. John's. It is a beautiful plant, crowning the hill above its clustering village, like some feudal castle of old, with towers and battlements and vine-clad walls. One turns into the grounds through the Argonne Gate, "In memory of these gallant lads of 'OURS' who fought in Argonne Wood," as the bronze tablet by the gateway announces, and immediately one finds himself in the center of the school's activities. He is standing in the main quadrangle around which are grouped the main barracks and administration building, the gymnasium, a recitation hall, and the chapel, all modern stone buildings, built in the militant English-Gothic style. It may be that our visitor will find the quadrangle deserted, but it is no sign of inactivity. He has but to step into the neighboring recitation hall to find a bee-hive of industry. The thirty highly paid instructors who guide the scholastic work of the cadets, do not lose sight of the fact

that a youth's first duty is to get up his lessons, and one only needs to visit these classes to understand why the scholastic standing of the school is so high.

### Youth Learns Control

Or it may be that our visitor steps into the quadrangle just as the trim bugler in front of the main entrance is sounding Drill Call. From Norfolk Hall, one block to the west, to Raleigh Hall, the same distance in the opposite direction, the call is caught up and repeated, and then what a scene of life and action ensues. From every doorway, from the east and west and the north and the south, come bronze-faced, lithe, and well set-up lads, each armed and equipped with the latest regulation equipment, and each hurrying to join the long lines of gray-clad figures that are rapidly forming along the gravel esplanade in front of the flagstaff. Suddenly the bugle barks the Assembly; the ranks freeze to rigid attention; six cadet top-sergeants snap out "Report" and there before us, in six well-sized companies, we see the



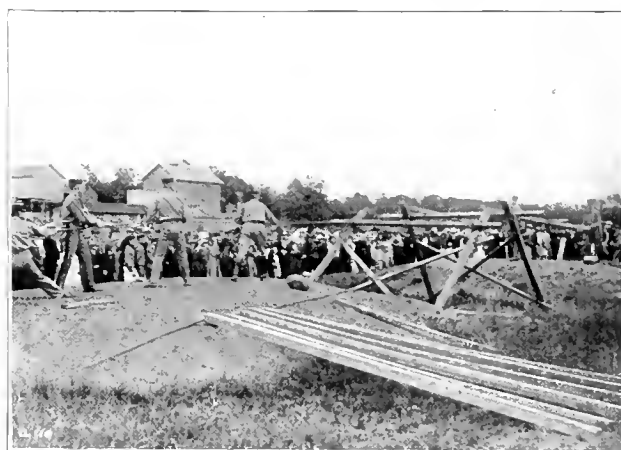
Shelter tent camp under inspection by officers of the general staff



Poise and potential leadership develop along with muscles of steel.



"Come and get it." At the call of the bugle, these boys follow all the precise routine of a military post.



Building a military bridge—a matter of about six minutes. Alert, erect, supple, quick with response in collective effort.

five hundred erect, clear eyed, steady young soldiers, who, with their predecessors, have earned the right to be called one of the most soldierly organizations in the world. We see more than that. We see the spirit of American Youth in training. We see the embodiment of youthful earnestness and dignity. We see youthful poise and self possession. We see potential leadership and potential leaders, and if we be of those Americans who *think* we unconsciously straighten our shoulders, and thank God that we have schools like St. John's.

It would take long to tell of all the activities of the cadet's life at St. John's; how, from reveille in the early hours of the morning till taps at night, he follows, at the beck and call of the bugle, the busy routine of a military post; how, carefully dovetailed into and coordinated with this routine, he gets a scholastic training unsurpassed by any school; how, by means of special training in military calisthenics and disciplinary exercises under War Department experts, he is made erect, alert, and supple; and how by means of required athletics, he is given a physique that is fit for any hardship with muscles of steel and the constitution of a backwoodsman.

### Health Record Unusual

As might be supposed from the above statement, the health record of the school is unusual. During ordinary periods the daily sick report shows less than one-half of one per cent of the student body "off duty," and that percentage includes the strains and sprains incident to major athletics. During periods of contagion, the percentage will occasionally range as high as  $2\frac{1}{2}$  per cent on the average. the great influenza

epidemic of the fall of 1918 was a severe test, but St. John's was one of the few boarding schools in the land which was not compelled to close its doors and it is a noteworthy fact that of the fifty-two cases recorded during the epidemic, all but six were boys who had entered the school for the first time, only a month earlier.

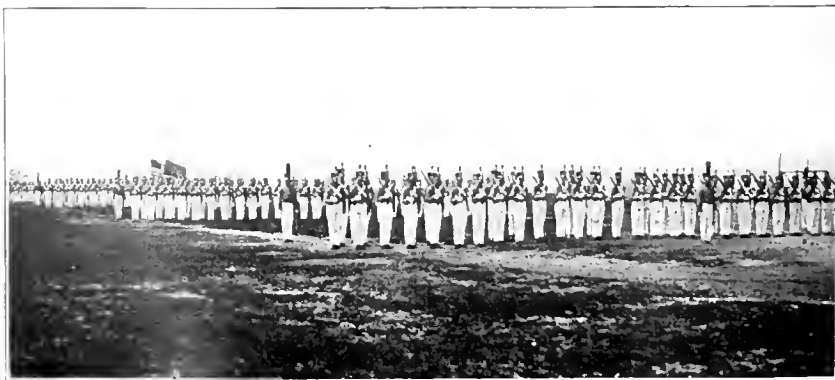
No description of St. John's would be complete without reference to the moral influences of the school. General Leonard Wood has said that no man was ever really a success unless he had a religion, and the lads of St. John's are surrounded with the influence of a religion which would appeal to a Leonard Wood or a Theodore Roosevelt. It is free from cant and dogma, but it bears heavily on the cultivation of the manly virtues. It teaches fair-play, chivalry toward women, contempt for what is low and base, and a reverence for the things of the spirit.

Can one question the value of such training to the youth of today and of the future? With the example of the war before us, with the knowledge of the terrible physical unfitness of our man-power when that war came, and with the knowledge of the growing

indifference of our people to the lesson which that *should* have taught us, it is at least a satisfaction to know that schools like St. John's are standing in the breach, and it is perhaps not too much to hope that they may some day prove to be that "little leaven which shall leaven the whole lump," and when we look about us and see the stoop-shouldered, hollow-chested, pasty-faced, blasé young devotees of the cabaret and the pool-hall with which our city streets are filled, let us remember the full-chested, virile, eager and purposeful young *doers* of St. John's, and take heart again.

### Open Nurses' Training Schools

Due to the increasing demand for nurses in the government hospitals the United States Public Health Service has opened two training schools for nurses in its hospitals. One will be inaugurated at Fox Hills, L. I., be- of its nearness to New York and the other will be located at Fort McHenry near Baltimore. Plans are under consideration for the opening of other nurses' schools as conditions permit in such other hospitals as may be fitted for the work.



The battalions in columns of companies.



# What Breathing Exercises Accomplish

BY OSWALD HOLMBERG, CAPTAIN IN THE SWEDISH ARMY AND PHYSICAL DIRECTOR OF CHRISTIANSBAD HIGH SCHOOL, CHRISTIANSBAD, SWEDEN

**B**REATHING exercises are probably more employed than any other form of exercises, both during the obligatory lessons at school and during voluntary gymnastics. They rarely fail to appear among the exercises for the physically broken down men recommended in papers and magazines devoted to health culture. It is easy to surmise that the frequent use of breathing exercises is due to the knowledge that oxygen is indispensable to life.

Which kind of breathing exercises are then used? Mainly deep inhalations and exhalations, executed by leaning the head back, expanding the chest, at the same time automatically drawing in the stomach, making audible the taking in and expelling of the air through the nostrils.

I presume the object of those exercises is to admit more oxygen and segregate more carbonic acid, thus stimulating general health and vitality. But as to the admission of an excessive amount of oxygen scientific experiments have proved that during these exercises the vital capacity is reduced. Even if this were not so, it is not advisable to furnish your lungs with more oxygen than they require and, as to the segregation of carbonic acid, there ought not to be an appreciable reduction thereof in the blood. It is the presence of carbonic acid in the blood that keeps the breathing machinery going. If by strong and persistent breathing exercises the blood is relieved of too much carbonic acid, the subject becomes dizzy and the heart begins to flutter, which has been an experience common to not a few people.

The breathing centrum located in the medulla oblongata, which is minutely adjusted gives us a natural ability to absorb the correct amount of oxygen at the inhalation and give out the corresponding amount of carbonic acid at the exhalation required by our systems. It is obviously wrong to interfere with nature in this respect under the supposition that we take too little oxygen and give out too little carbonic acid; but, somebody may suggest, is it not advisable to stimulate the breathing after a violent physical exercise? No, it is not. Shortness of breath is caused not through lack of oxygen, but through overworking the heart.

The faults with the breathing exercises as practiced in this country are:

(1) Executed in a uniform way, and at command interferes with the person's individual form and rhythm of breathing. (2) Breathing exercises may, when executed with excessive chest expansion, as is very often the case, predispose to pulmonary emphysema and tend to affect a sensitive heart, since breathing and circulation are closely related. (3) Breathing exercises, finally, interfere not only with the mechanical part of respiration, but also with the chemical exchange.

What we may accomplish from a

gymnastic standpoint in order to aid the breathing is to develop the mobility of the chest—through bendings, twistings, heave movements—and the anterior abdominal region. The best breathing exercise is running outdoors, when the mechanical part of the breathing gets stimulated in a natural manner in connection with the exercise of the heart and without interfering with the chemical part. As regards shortness of breath, this is not to be made a direct objective nor forced. It should be left to Nature to remedy, but not in a standing or reclining position, but through ordinary marching.

## Sanitary Analysis of Milk

**T**HE American Public Health Association has recently brought out the third edition of a report of the Committee on Standard Methods for the Examination of Milk. A summary of the more important changes from the second edition follows:

(1) The scope of the report has been broadened to cover the sediment test and the examination of milk for the presence of long chain streptococci.

(2) A summary of required procedures is given at the end of the report.

(3) Encouragement is given for further investigation of promising new laboratory methods.

(4) Official recognition is given to microscopic counts made directly from unpasteurized milk.

(5) Methods for determining the H-ion concentration of agar media are given.

(6) It is recommended that the practice of speaking of agar plate counts as showing the "number of bacteria per cc." be discontinued and the words "number of colonies" used.

(7) It is insisted that punitive actions should be based upon the average results from a series of samples, and that, where possible, the routine counts should be verified by suitable procedures when actions based on their use are likely to be questioned.

The present third edition report has been prepared by a committee consisting of W. H. Park, chairman; M. P. Ravenel, R. S. Breed, J. A. Anderson and H. A. Harding, with B. H. Stone and W. R. Stokes as adjunct members. This committee has sought and obtained the cooperation of still

other associations interested in the sanitary control of milk in an effort to make the report truly representative of American laboratory workers.

The first edition of the Standard Methods for Milk Examination was prepared and issued in 1910. A second edition of this report was prepared in 1916 by a committee which worked in cooperation with committees from the Society of American Bacteriologists and the American Dairy Science Association.

## Boys' Health is Biggest Asset

"Just because our war with Germany is over, the United States cannot be assured it will not be dragged into another conflict. It will be almost a miracle if we escape some of the difficulties which exist in the world today." This warning was given by Maj. Gen. George Bell, Jr., at a luncheon of the Chicago Association of Commerce. "In view of this outlook," he continued, "it behooves us as a forehanded nation to take such steps as we can in the way of military preparedness, and the backbone of preparedness is better health. It behooves us to see that our boys and young men are given such training that they will be ready when the time comes. Physical fitness is the real index of a nation's military strength. Health records are equally important with scholastic ratings and physical training should be carried on all our curricula."

# "Hold on to Health" The Camp Fire Slogan

## New Values Are Set Upon Individual Effort to Conform to Standards Necessary for Group Approval

BY ROWE WRIGHT, DIRECTOR, CAMP FIRE GIRLS, NEW YORK CITY

IT IS no longer the thing to enjoy poor health. One hundred thirty thousand Camp Fire Girls, organized in every state and in seventeen foreign countries, are making the sickly, hothouse flower sort of girl unpopular. The story of how these girls have made health popular, how they "hold on to health," is an interesting one. It is the story of a program which has made the out-of-doors so attractive that it can hold its own against the movie and crowded dance hall. The Camp Fire Girl considers her health a sacred thing. When she enters Camp Fire and learns the law, which is:

Seek beauty,  
Give service,  
Pursue knowledge,  
Be trustworthy,  
Hold on to health,  
Glorify work,  
Be happy.

she is impressed with the fact that one of her first duties is to hold on to health. Every Camp Fire Girl wants to be strong and well so that she can enjoy life both now and in the future. She therefore sets about to acquire certain simple habits which are important to health. She must learn to sleep enough, to eat the right sort of food, to keep clean outside and inside, not only once in a while, but all the time—and she must take enough and the right sort of exercise.

In order to help her to form the habits of health, the Camp Fire Girl keeps her daily health record. Each

night she checks up on her health chart the things she has done which will tend toward making her strong and well. At the end of the month, she counts up the number of points she has won, and if she has a 90 per cent record she is entitled to wear a health symbol on the sleeve of her blouse. Each additional month that she wins the health symbol she may add a bar to it. The symbol itself means sleep, cleanliness, and exercise. Whenever you see girls with this little emblem on their sleeves you may know that they are a part of the little army of girls who are determined to have healthy bodies.

The biggest thing which the Camp Fire Girls do toward the making of the next generation a generation of healthy women, is in the stimulation of outdoor life. Just as the fire is a center of the home so is the Camp Fire the center and symbol for out-of-door life, and this idea is incorporated in the name of the Camp Fire Girls. There is no Camp Fire Girl who has not learned to love the pleasure of picnicking or tramping over the hills or along the open road or of sleeping under the stars. One hundred thousand Camp Fire Girls went camping last year for one or two weeks and they came back healthier and happier. Camping is considered of such importance in the training of the adolescent girl that on the application blank of each prospective Guardian of a group of Camp Fire Girls

appears the question: Can you go camping with your girls for a week or more? No girl or guardian can spend a week or more in camp without having gained a new and helpful type of experience, for in camp all the daily processes of life are simplified. She returns from a well regulated camp refreshed in body and mind, but, more important, with a new confidence in herself and in her abilities.

Camping does not mean to any girl the throwing off of all restraint, a breaking down of daily routine in order to see how much hardship she can stand. It means exactly the opposite. Every camp which results in mental, moral, and physical gains for the girl must be conducted on a fairly rigid routine. This routine is necessarily different from that of the home. It prescribes regular hours for sleep, exercise, food, and rest, a regulation which is as important to the growing girl when she is on her vacation as when she is at her home. A typical Camp Fire schedule is based on the principle of "Early to bed, early to rise" as well as on the principle of "All play and no work." The following is a typical daily program:

6:45	Getting up.
7:00	Setting-up exercises.
7:15	Morning dip or shower.
7:45	Breakfast.
8:30	Clean up and preparation for tent inspection.
9:00	Tent inspection and singing.



The Camp Fire Girls know how to take care of themselves in the open, even to the extent of pitching their own tents.



Order and precision characterize all the camp arrangements for comfort.

- 9:30. Period for hand craft work or special classes in first aid, etc.  
 11:00 Period for folk dancing, group games, etc.  
 12:30 Dinner.  
 1:00 Rest hour (absolute quiet).  
 2:00 Quiet hour, reading, study, or writing.  
 3:00 Swimming.  
 4:30 Walking, canoeing, riding.  
 6:00 Supper.  
 7:00 Evening stunts and entertainment.  
 9:00 Lights out.

There are certain requirements regarding the health of campers which every director of a Camp Fire Girls' camp is urged to consider. Every girl who is planning to go camping should have a physician's word that she is in good physical condition, that is, that she has no tendency toward any disease which might be developed in camp. The director should be told if any girl is not strong enough to follow the camp schedule.

### Preliminaries Necessary

The director of a Camp Fire camp has considerable work to do in the proper purchasing of supplies long before the time for camping. She must have ordered the amount of staple supplies necessary and the brands which she knows to be unadulterated. The dietitian of any camp has a real problem, for she must not only consider the well-balanced meal but the type of food which can be cooked out of doors and over an open fire. No Camp Fire Girl is satisfied unless the majority of her meals while on a camping trip are cooked out of doors. In the "Camp Fire Girls' Manual" and in their "Vacation Book" these are typical menus of well-balanced, suitable meals for campers. These have been not only endorsed by a physician, but have been tested as to their practicability for out of door cooking and for their

ability to appease the appetites of husky campers. There is hardly a Camp Fire Girls' camp in the United States which does not set down as one of its first rules that no candy shall be admitted in camp. Parents are discouraged from sending candy or sweets to their daughters, and the cases of illness in camp are exceedingly few. In the large camps where a trained nurse is in attendance in case of illness, it has been found that her only duties have been to teach first aid and simple nursing.

The camp director should always make sure that the water of the camp is pure. If a new site is being selected, the water should be analyzed and pronounced pure before the selection is made. In camp, whether large or small, there are certain principles of sanitation which are scrupulously followed. The first should be the disposal of refuse. All Camp Fire Girls know that all refuse should be covered, that the refuse hole must be some distance from the kitchen and

that a disinfectant powder like chloride of lime, should be scattered over the hole at frequent intervals. The second principle is the destroying of everyday litter and the refuse which is burnable. The third and most important principle is the building of the latrine. Camp Fire Girls are urged, whenever it is possible, to provide their camp with a chemical latrine. Where this expense cannot be met, the following directions are given: The latrine should never be located on a slope higher than the camp or water supply even though it be some distance away. The hole should be deep and a box of sand or ashes scattered in it frequently. Disinfectant should be used several times a week. The fifth principle is the proper protection of food against mice, squirrels, etc. Camp Fire Girls realize that food is not wholesome which has been exposed to the flies or which has been molested by mice or squirrels. The last principle is a provision for personal cleanliness. Every



Camp Fire Girls out for an over night hike.



The Camp Fire Girls learn folk dancing out of doors. Supple bodies, hard muscles, perfect poise, make possible full freedom of expression.



Mountain climbing and the exhilaration of a night under the stars stimulate the creative imagination of these girls. Repeated excursions of this kind are health giving as well.



Wholesome interests as well as physical education are involved in the garden programs of the Camp Fire Girls.

Camp Fire Girl knows that it is of paramount importance to be clean while she is in camp. She is expected to take a morning dip or shower before she dresses, and is expected to take the same care of her teeth, hands, and hair as she would at home.

#### Rigid Personal Care

All this sounds formidable to those of us to whom it is new. To the Camp Fire Girl, however, it is not difficult to consider all the matters of health and hygiene when she is camping, because she has become accustomed to taking proper care of herself every day of the year.

All Camp Fire Girls love to go to camp. Most of them earn by group

effort the money for their camping expenses. Some of their camps are most primitive and crude; others are permanent and with adequate equipment, but always a Camp Fire Girl returns from her camping experiences having learned new lessons in democracy as well as in health. For at camp it is the girl herself that counts. She knows she cannot be popular no matter how wealthy her father or how distinguished her lineage if she cannot do the things the other girls can do. She must know how to cook, she must be willing to do her share of the cleaning up, she must be able to swim, and to hike as the other girls do. She must not be afraid of the dark or the noises of the woods at night; she must

be a good sport on the overnight hike and not complain if the ground gets hard or it begins to rain and she has to crawl inside her poncho.

In camp as in no other place in the world, the girl has only her own two feet to stand on. She has to prove herself to be what she pretends to be. The experience of camping with one's chosen friends, of having to share the few conveniences of the camp with several others, of getting the inspiration of the woods and the stars and of all growing things, is one which puts its mark upon the girl and makes her more sturdy of fibre and more understanding of soul.

#### Federal Housing Division Planned

Senator Calder of New York and Representative Tinkham of Massachusetts have introduced a bill proposing a Division of Housing, approved by President Harding and sponsored by Secretary of Commerce Herbert A. Hoover. It is the revision of the measure originally introduced by Mr. Tinkham July 8, 1919, and proposes to put the new division in the Bureau of Standards under the administration of the Secretary of Commerce, and to turn over to it all the construction and housing data collected by the United States Housing Corporation, the Emergency Fleet Corporation, and the special commission on housing headed by Senator Calder, which last year made a tour of industrial centers, securing first-hand information as to housing needs.

#### Eyesight Conservation Council Organized

The Eyesight Conservation Council of America which was recently organized has headquarters in New York City. Mr. L. W. Wallace, New York, is president of the organization, and Dr. Cassius D. Wescott, Chicago, is vice-president. The object of the Council is the conservation and improvement of vision through the arousing of public interest in eye hygiene, especially as it pertains to the protection of the eyes in hazardous occupations. The plans of the council include sending out information concerning optics; on the proper lighting of homes, schools, offices, factories, and private and public buildings; trying to promote periodical examinations of the eyes, especially of school children and industrial workers, etc. A nation wide "Save your sight" campaign will be conducted by the organization.



Group exercises stimulate competition, and the value of the setting-up exercises indulged in each morning is fully apparent.

# Infectious Diseases in Summer Camps

Forethought Is Better than Afterthought; Prevention Better than Cure

BY D. L. RICHARDSON, M.D., SUPERINTENDENT, PROVIDENCE CITY HOSPITAL, PROVIDENCE, R. I.

THE popularity of summer camps for boys and girls is generally recognized and they are increasing in numbers every year in all parts of the country.

No one will dispute that a summer spent in the open country is a wonderful thing for any boy or girl. They come back home in the fall with clear eyes, full of energy and the picture of health. It seems a pity that children must be reared in large cities and are deprived of freedom and healthy conditions surrounding country life. The life of large city dwellers is altogether abnormal. However, it is readily admitted that the cities afford the best protection against infectious disease. The water and milk supplies are guarded, the excreta properly disposed of, and the Health Department possesses the machinery for controlling infectious disease. People also receive better medical treatment, until today it is safer to live in the city than the country.

## Safeguards for Health

Parents should be warned of the dangers from infectious disease in summer camps. They should satisfy themselves of the character of those conducting the camp, and also whether proper measures are taken to prevent infectious diseases. It is also important to be sure that the boys in camp are provided with prompt medical treatment, preferably by a doctor in camp or one very near by.

It need hardly be emphasized that those in charge of such camps should be of good character and need to have had experience in such an undertaking. There are many other important features, moral and physical, which require judgment and constant watch. An outbreak of infectious disease is always a very unfortunate happening which cripples the activities of the camp and gives it a bad reputation. Unfortunately, many camps are situated a long distance from larger towns and cities and much must be done with rather inadequate facilities.

Every camp should have a doctor. Two or more neighboring camps might combine and arrange for one to take the responsibility of the health of the boys and girls. It is a custom

to employ fourth year medical students or a young physician just out of school, perhaps just waiting a few months for his hospital appointment to begin. His responsibility is considerable and he should be reliable and resourceful. To him should be delegated all matters pertaining to the health of the vacationists.

The site of the camp is of some importance. It should be located on high well drained land out of the way of surface wash and not muddy. Trees are a great asset to the situation. It is well to have at least one permanent building where meals can



Boys' camp under the auspices of the Y. M. C. A., conducted annually at Phantom Lake, Wis.

be cooked and served and for recreation during rainy, raw weather. The general resistance of city boys who are not used to roughing it is of some importance as related to the development of infectious disease.

The buildings and tents should be kept orderly, dry, and neat. They should not be overcrowded. Ventilation should be obtained by open windows or tent flaps at night. The bedding should be aired daily. The tent sides should be raised and the cots put out of doors on clear days.

The sanitation of all camps should be approved by the State Board of Health. The Board should lay down practical rules and these should be observed. The most important functions of the Board should be to safeguard the water and milk supply, to insure the disposal of excreta and

garbage, and advise in case of an outbreak of infectious disease. State inspectors should visit all such camps.

The water supply should be from a well which is some distance from privy vaults and on higher ground, and the well should be protected by curbing which does not leak and it should always be clean and should be in a safe situation as regards to human habitation. Lake or river water should be boiled if used for drinking provided there are any habitations near the shores.

The milk supply should be scrutinized carefully. Whether it comes from a neighboring farm or from the camps' own herds, it should be milked by healthy milkers who are clean milkers. The cans should be washed and scalded thoroughly as soon after emptying as possible. The milk should be cooled at once by ice or cold well water and at the camp should be kept in cold well or ice water.

The common privy will generally have to be used. It should be located at a little distance from the camp on a lower situation, away from the shore of a lake or stream. The vault should be about four feet deep and the privy screened from flies. Road dust or loam should be thrown into the vault once daily.

There are on the market chemical closets which are used quite extensively in the South. They are tanks filled with disinfecting solutions into which excreta fall. They are contrived for easy emptying. The excreta should be buried some distance away from camp on lower ground.

It cannot be too much emphasized that indiscriminate defecation and urination should not be allowed about any camp. Both feces and urine may be washed or leach into the water supply of that camp or another nearby; besides, it is filthy practice.

Garbage should be promptly disposed of and not allowed to lay about collecting flies. It should be deposited in a covered receptacle and this should be regularly emptied and the can washed out. It should either be buried or given to hogs. In place of cans a large pit may be dug near the kitchen and after each meal the swill





Underwood &amp; Underwood.

Life in the open is calculated to develop in these Y. W. C. A. girls at Camp Reed College, Portland, Oregon, the same hardihood of physique and the same wholesome outlook that is regarded as the ideal for boys.



Underwood &amp; Underwood.

This line of Girl Scouts forms part of the quota of Girl Scouts who develop health and good spirits in the open at Central Valley, N. Y. They are here awaiting turns with their wash basins. Scrubbing time is not neglected even on vacations.

thrown into it and covered with dirt.

Kitchen and wash water should not be thrown about indiscriminately. Another pit three or four feet deep and about three feet wide in diameter should be dug and filled with round stones. The size of the pit of course will vary with the need. The waste from the sink should run into it and other liquid waste thrown into it.

The kitchen, if in a frame building, should be screened. It should be kept neat and clean.

### Health Practices Enforced

There is some danger from infection through soiled dishes. This has been fairly well shown by the army experience. Dishes should be washed in as hot water as the hands will stand. It is important that it be changed frequently enough to keep it hot and not too dirty. After washing, the dishes should be scalded well with boiling water and allowed to dry. If dish towels are used for drying them they should be washed with hot water and soap after each meal.

At least one room in a permanent building should be set aside for the sick. This room can be used for isolation purposes, as well as for those who are not infectious. It should contain one or two beds, bed linen, chairs, table, and a stand on which may be placed a basin for hand washing and another for antiseptic solution. A bar or liquid soap, and a scrub brush should be provided so that the hands can be washed well after handling an infectious patient. Sulphonaphthol, which can be used for infections, should also be provided and a solution (warm water) a teaspoonful to the quart of warm water will serve as a disinfectant after washing with soap

and water. Paper towels should be on hand, if possible, for use. Small hand towels or clean pieces of cotton cloth may be used, each once only before being boiled and washed. (To sterilize the hands, they should be immersed in the antiseptic solution for at least one minute.)

Some kind of an outer garment—a hospital gown or a linen duster—will serve for the doctor when he examines a patient and the patient's attendant.

No dishes or utensils should be removed from the room without being put in a pan and boiled ten minutes before washing. All linen removed should be boiled before washing.

After the discharge of a patient, blankets, comforters, pillows, and mattresses should be aired under direct rays of the sun at least several hours. The bed and other furniture, door knobs, etc., can be washed with soap and water.

### Admission Examination

Non-boilable things like shoes, watches, thermometers, etc., can be washed with soap and water and sulphonaphthol solution.

In case a room in a permanent building is not available a separate tent may be pressed into service and provided as already described.

To avoid the introduction of infectious disease it is essential that every boy receive a physical examination before he is admitted to the camp. The family physician can be called upon to do this but it is an added precaution to have the camp doctor do it over again as soon as the boy arrives. A card should be made out for each boy with name, age, home address and on it should be put down

the past diseases which he has had, particularly contagious diseases, and his complete physical examination. This card not only suffices for the purpose of recording facts helpful for the prevention and control of infectious disease, but furnishes the doctor data on which he can judge the kind of sports a boy is physically able to enter into without detriment to his health.

### Preventive Measures

To avoid infection, wounds, small or severe, should receive prompt attention. They should be cleaned and some antiseptic solution applied and dressed with sterile gauze. Subsequent dressings should not be neglected. In case of deep puncture wounds, from nails, etc., or revolver or gun shot wounds, tetanus antitoxin should be administered. The danger of tetanus from punctured wounds when camps are in the woods is very slight; but if they are situated in the neighborhood of farms where horses and cattle are kept there is always a possibility of tetanus infection. Blank cartridge wounds should always call for antitoxin at once.

### Outbreaks of Disease

In discussing what should be done when infectious disease develops, first consideration should be given to the fact that boys' camps are not properly provided for the care of the sick. If it is a slight illness of slightly infectious nature such as tonsillitis, acute "colds," for diarrheal conditions the patients may be kept in camp. Otherwise, the patients should be sent home, if it is not far away, or to the nearest hospital. This last principle holds good for all serious



non-infectious disease and for injuries.

Each of several common infectious diseases will be discussed separately. The camp doctor should be prepared to carry out measures to properly care for the sick, protect those exposed, and avoid breaking up the camp's vacation activities if possible.

### Diphtheria and Scarlet

All sore throats should be looked upon with suspicion and at once isolated, and the camp should be provided with sterile swabs for taking cultures. These cultures can be mailed to the nearest laboratory. If a case of diphtheria develops the patient should be sent to the nearest hospital, or to a private home in an emergency, by automobile or ambulance and not by train unless absolutely necessary. This method of transportation should be practiced for all infectious diseases. Cultures should be taken once at least from all members of the camp and all carriers sent home or to a hospital. For a week subsequent to the last exposure throats should be examined daily so as to be able to detect early and secondary cases. After the end of the period for a week or two, careful watch should be kept for sore throats. There is no need of closing the camp unless several cases develop.

When a boy or girl is found to have scarlet fever he or she should be sent to the nearest hospital, or home as the case may be. Every other member of the camp should be examined carefully daily for a week after the last exposure. A list of those who have had scarlet fever should be made and these should receive the most attention. Every sore throat occurring at such a time, whether there is a rash or not, should be treated as scarlet fever. If the first case has been promptly detected and removed, secondary cases are rather unusual unless there is a carrier or a mild overlooked case in camp. In looking over the camp members at the first examination each should be asked whether he has had a sore throat within three or four weeks or whether by chance there had been scarlet fever in his family before leaving home. Suspects should be isolated in camp or if the suspicion is strong they should be sent home or to a hospital.

### Control of Measles

It is difficult to control this disease because by the time the first case is recognized, which is usually at the beginning of the eruption, the patient

has been infectious for three or four days.

The first patient should be sent home or to the nearest hospital at once. All other members of the camp should be examined and those who give no history of measles should be sent home. Secondary cases will not develop for two weeks so that they will not be infectious during the trip home within the first eight or ten days after exposure. The rest of the camp members should be watched for two weeks after the last exposure.

Whooping cough, while not likely to develop, may be quite crippling to a camp. The first patient should be sent home or to a hospital at once. It is quite likely that secondary cases may not develop for so many children have had the disease. The open air



Underwood & Underwood.  
Semaphore drill as practised at the Girl  
Scouts' camp at Central Valley, N. Y.

life will also be a factor in preventing its spread. However, all who have not had the disease should be watched carefully for any cough and all such should be isolated, put in a separate tent until the diagnosis is made. If it proves positive the boy should be sent home. It will hardly be necessary, unless the disease is well under way when discovered, to send home all those who have not had the disease.

In case of mumps the first case should be sent home or to the hospital at once. All other members of the camp should be examined and suspects isolated in a tent for observation. All of these who have not had the disease should be watched daily for three weeks after the last exposure and each case sent home or to the hospital as it develops.

In the event of the occurrence of epidemic meningitis every case developing should be recognized early and hurried to the nearest hospital, for treatment should begin early. After this, very close watch should be kept of all members of the camp and all with headaches, rhinitis, and sore throats should be isolated and observed. It is not practicable to detect carriers but daily observation of the camp members should reveal secondary cases at the earliest possible moment.

If not very ill, boys sick with tonsillitis may remain in camp; otherwise should be transported home or to the nearest hospital. If kept at the camp, they should be isolated until fully well.

### Typhoid Fever Occurrence

The patient should be removed at once, preferably to a hospital. The investigation of the source of the disease should be left to the State Board of Health or the nearest Health Officer. The camp doctor or other general practitioner is not qualified. Investigation should be instituted for the source of the disease. First of all, the members of the farm house from which the milk comes should be examined for mild or frank typhoid fever. If the history, Widal test or examination of the stools reveals that any one in the household has ever had typhoid, the source of the milk supply should be changed. Milk should be boiled pending investigation.

The water supply next should be examined. A sample of the drinking water should be taken by a state inspector who has an outfit for the purpose. Examination for the *Colon bacillus* will determine whether it is polluted with excreta. If it is, the water supply should be changed. Examination for the typhoid germs is useless. In case of suspicion, during investigation all water for drinking or used in the preparation of food should be boiled.

Each member of the camp should be questioned and examined, laying stress on the previous history of typhoid fever at any time, a recent attack of diarrhoea or continued fever. All such suspects should be sent home.

When patients are sent home or to the hospital a history of the case should be sent along, and when contacts are sent home a history of the exposure should be furnished to the parents.

For making daily examinations the members should be lined up for sick call and every one questioned about

how he feels, and if not well, should be asked to step forward and later examination carried out carefully, including temperature. The doctor should scrutinize each boy carefully as he passes along and have any who do not look well step forward for later inspection. He should have throat sticks in his pocket and if he is watching for a disease with a rash the boys should be stripped to the waist, when responding to a sick call.

He should use some of the older

boys to help him in his examination or to care for the sick in the isolation room or tent until they are sent away. It is well for him to pick out two or more boys at the opening of the camp and give them a few simple instructions about caring for the sick, so that they can act as his assistants.

Home isolation methods should be carried out, for each camp affords many if not all the features of equipment found in the country home and the rest may be improvised.

ment would depend on the locality. Plainly, an outfit of clothing and equipment that is ample for the seashore would need to be modified for a rugged situation in high altitudes. Clothing should be substantial and adapted to the location, and simple if roughing in the open is to be a pleasure instead of a hardship.

Neither is the camping trip to be a period of reckless strenuousness. Moderation should govern the stunts undertaken by the tenderfoot and there needs to be comfort in the camp after the fatiguing sports of the day. Cots, pillows, chairs, tables, cabins, must be chosen to contribute to the physical and mental relaxation which should be the common purpose of the campers.

A very sane point of view has developed out of recent studies of the human body from the viewpoint of physics. The human body is more and more coming to be regarded as a reacting mechanism, subject to laws of physics and chemistry for the maintenance of its normal equilibrium. The fatigue studies which have lately been so much in the foreground are based largely upon bodily mechanics. Motion studies have been made to clear up the conditions which account for wasted energy and result in undue fatigue. Individual energy potentials are now electrically measured. The work of one prominent writer has become identified with "mind-energy" as a source of dynamic power. Research workers seeking out the psychologic factors involved in fatigue have set themselves the task of penetrating the "mechanical processes of

## Comfort in a Summer Camp

AS THE camping season approaches, the lure of the open is upon the multitude and a vast exodus occurs from city to country, from workshop to field and stream. The vacation period, however, is not an unmixed blessing, as it is too often marked by a parallel in the periodicity of certain diseases. Vacation typhoid is still an entity in many communities. This periodicity of disease may be held to include a drowning season, and even the accidents which are subject to increase at certain seasons.

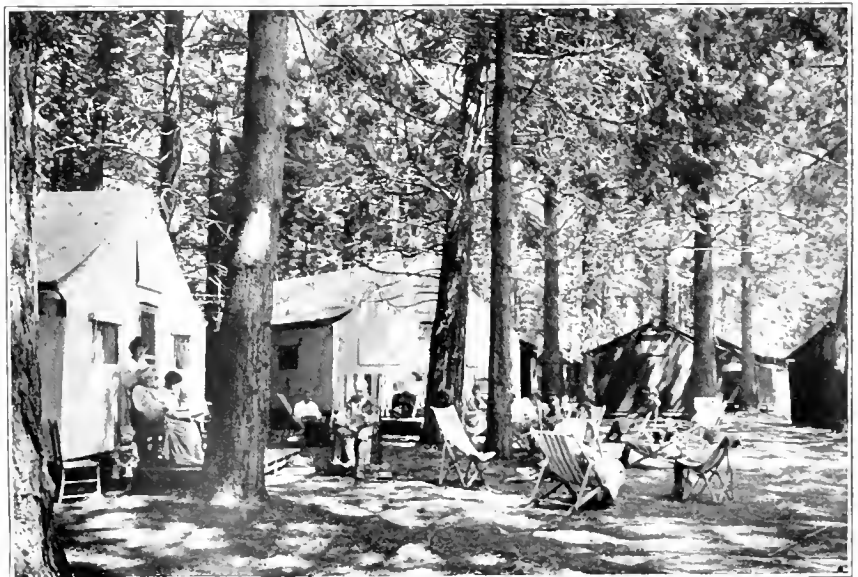
Medical literature is full of warnings to an unsuspecting public as to dangers in health from the radical changes of habit involved in camp life. Water is to be boiled, milk microscopically scrutinized.

Most of the health tenets for vacationists are in the way of prohibitions. With relaxation there must, of course, be no lapse from the well ordered habits that are the fundamentals of health. The facts stand that people are often harmed instead of helped by their vacationing. California has had to make the most stringent regulations to avoid the despoiling of her mountain camps. Michigan has a mobile laboratory, which became a health necessity to avoid the pollution of her streams during the summer season. Wisconsin has made special rulings regarding the authority of state and county health officials over the nomadic camping public.

With the general direction of public attention toward camp supervision and the sanitary codes drawn and enforced, it is to be expected that the menace to public health from the careless vacationist will soon be reduced to a minimum. There will also be developed standard hygienic codes for each community, so that the intelligent vacationist by giving the matter proper forethought may safeguard himself against any needless

sanitary hazards. It is not too much to expect an extension of the activities of sanitary engineers so that information may be obtainable in regard to the suitability of various locations for camps.

But the whole question of camping and of finding health and surcease from care by life in the open involves more than mere negation of disease. What the vacationist wants to know is not what to avoid, but what to do to make the annual trip a success. Whether a vacation means a rest or hardship depends upon whether it brings relaxation, and relaxation means more than the mere absence of unfavorable conditions. Much depends upon the matter of physical equipment. Camping communities where tents or cabins provide stationary equipment require the minimum provision of paraphernalia. What would be needed in such a case in the way of personal equip-



The spirit of the woods is here. The experienced camper carries his comfort with him. In surroundings like this the sunshine and fresh air cure becomes immediately and permanently effectual.

# THE NATION'S HEALTH

(Continuing MODERN MEDICINE)

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## Salvaging Humanity a Social Necessity

Increasing Emphasis Must Mark the  
Responsibility of Society to the Individual

BY JAMES P. MUNROE, VICE-CHAIRMAN, FEDERAL BOARD FOR VOCATIONAL EDUCATION, WASHINGTON, D. C.

AS INDIVIDUALS and as a people, we were raised to such a pitch of fervor during the war that it is a cruel awakening to find that this exalted spirit was, in the main, temporary, and that the white flames of patriotism, like those of other fires, end in a heap of ashes. It is too soon to appraise the good which is certain eventually to come from that period of moral enthusiasm and it is too early to evaluate properly the evils which are conspicuous accompaniments of the "ashes" stage in which the United States now finds itself, rather dishearteningly, to be.

One of the most outstanding of the material evils is the unscientific and seemingly wasteful way in which the salvaging of the vast army and navy stores left on the national hands by the sudden stopping of the war is being done. In the belief that the end was much farther away than proved to be the case, munitions and other supplies essential to military success were accumulated in almost unbelievable quantity. To have thrown all this suddenly upon the market would have been, of course, disastrous; but it is even worse to permit so much of this valuable material to go, as there is reason to fear that it is going, to total destruction through the rust and decay of Governmental neglect.

Much of the property created for war purposes, such as the extensive

*Collective responsibility for rehabilitation, so clear in the case of ex-service men, is less poignantly felt as relates to the average man who may be an unwitting and involuntary victim of social and industrial conditions over which he has no control.*

*If abuses growing out of the increasing complexity of social life demand increasing individual sacrifice without a compensating conservation, then civilization is self-limited, if not self-destructive, and we must salvage waste, especially of human materials, and set up new standards of social obligation.*

training camps, was avowedly temporary, and its destruction has to be accepted as a necessary waste of war. By far the greater part of the vast accumulation was, however, not of this character; but is as useful for purposes of peace as for those of war. To have worked out a comprehensive scientific method of getting this valuable material, no longer of military use, back into the channels of peace would have been another triumph to be added to those accomplished by the United States in making so quickly effective its long delayed entrance into the World War. Unfortunately, this

logical post-war step was not taken and the marked reduction of the general tax burden which would have followed such action can not now be looked for.

No one is particularly to be blamed. It is but another evidence of the fact that, as a people, we are wasteful and impatient of economies, whether the petty ones of our own households or the immense ones of that Government household which costs every one of us, directly and indirectly, so staggering a sum.

Fortunately, in the matter of human salvage, we have been much more thrifty; and one of the good outcomes of the war is that the Government has taken steps in human conservation far in advance of those followed heretofore by itself or by any other nation. The advance of thought, as well as the disquieting experiences of the World War, when we found ourselves close to national bankruptcy in the matter of men available for fighting and other military services, focused national attention, as never before, upon the highly precious nature of an educated, or even a semi-trained, man and aroused widespread public support for measures which should salvage human beings in a scientific, humane and comprehensive way.

The rehabilitation program urged upon the Federal Government from the moment that our entrance into the



This handicapped man, war-wounded, has become an expert auto-mechanic and is laying plans to start his own business when his course is finished.



This man, formerly a farmer, finds it possible to do vulcanizing with an artificial arm almost as well as his unhampered competitors. He was saved from the industrial waste heap.

war seemed probable, met, therefore, with ready response from those in authority as well as from the great body of thinking citizens. The delay through which the Soldier Rehabilitation Law was not passed until June, 1918, fourteen months after we entered the war, was due to difference of opinion as to its administration rather than as to the fundamental importance of the measure. While, of course, there were various reasons impelling the Congress to place the responsibility for soldier rehabilitation in the hands of an existing educational body, the Federal Board for Vocational Education, the controlling motive seems to have been a belief

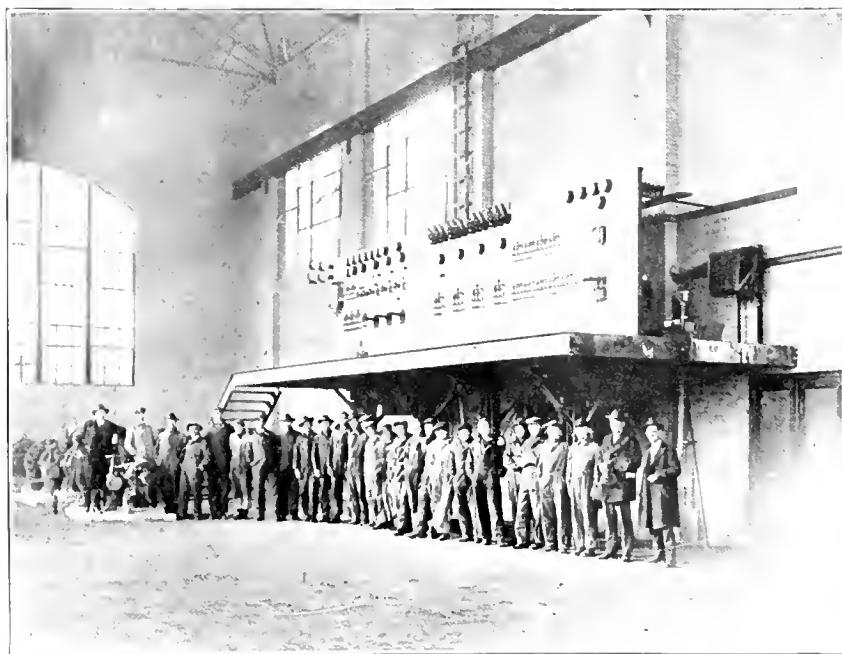
that the dominant aim of the proposed legislation should be towards sound education for employment rather than towards the mere securing, on a haphazard basis, of a job.

#### Good Progress Made

The work of rehabilitating disabled ex-service men was so fruitful of good results that Congress, in June, 1920, needed almost no argument to pass the so-called industrial rehabilitation law under which the Federal Government and the states are already making good progress in dealing with the long neglected duty of saving men and women, injured in industry or otherwise, from the economic waste heap.

Although this new responsibility was placed also upon the Federal Board for Vocational Education, the problems of soldier rehabilitation and of civilian rehabilitation are in their nature quite dissimilar and call for radically different methods of administration. That of rehabilitating the ex-service man is an intensive, limited service, requiring the rapid expenditure of large sums of money by the Federal Government, which was solely responsible for the disabilities involved; while that of civilian rehabilitation is one to be worked out slowly and carefully by the states with such aid from the Federal Government in the way of initial expenditure and research as may be necessary as a stimulus. In carrying out the work of soldier rehabilitation the Federal Government has already appropriated nearly one hundred and fifty million dollars and expects to make available perhaps as much more before the work of rehabilitation, some three or four years hence, will be practically finished. In carrying forward the work of civilian rehabilitation, it has appropriated only approximately one million dollars a year for four years, believing that this will be sufficient to give that initial stimulus to the states under which the economic and social value of rehabilitation will be so fully demonstrated that, thereafter, the states will carry it forward, on an increasing scale of expenditure, as a matter of course.

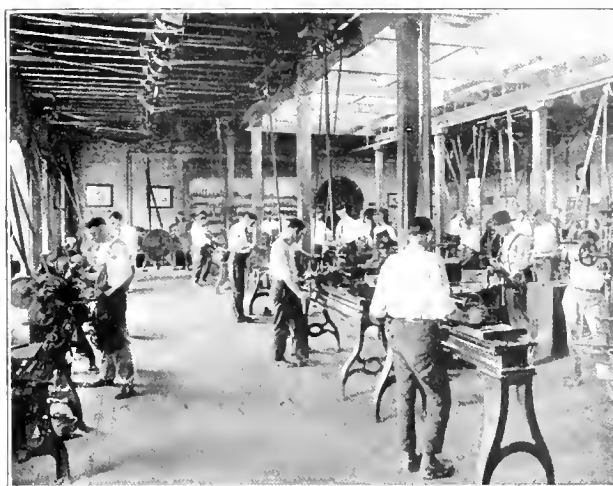
Meanwhile, these states will have before them as an evidence of the effectiveness of rehabilitation, the conspicuous achievements of the Government in the matter of the rehabilitation of ex-service men. As of May 1, 1921, less than three years after the



This group of electrical men installed the switchboard shown in the power plant. The cement bases were also made and the motors placed by the same group.



Handicapped negroes at Tuskegee Institute making shoes.



Men receiving training at the machine shop of Tulane University.

law was passed, the Federal Board for Vocational Education, through its agents all over the United States (for from the beginning, its activities were decentralized, and it now has, in addition to the original fourteen district offices, over 125 local offices) has rendered decisions, through personal interviews, upon the applications of approximately 350,000 ex-service men, has adjudged about two-thirds of them to be eligible for training under the rehabilitation law and has placed in training with maintenance pay or without pay (in the proportion of about six to one) approximately one hundred thousand men.

To do this, the Board is availing itself of about two thousand schools and colleges, both public and private, and of about ten thousand industrial establishments. Furthermore, in the cases of about twelve thousand men still in hospitals or sanitoriums with diseases, such as tuberculosis, from which recovery is slow, the Board is maintaining schools and classes in which training is a matter of medical prescription as to type and hours, and where it serves the purpose both of hastening recovery and of shortening the subsequent period of vocational training. Moreover, to meet the needs of non-English speaking men, illiterates, and those for whom it is difficult to determine the most suitable line of training, the Board has established, at strategic points, training centers, under its own teachers, where the day's work is individualized for the purpose of remedying each man's special deficiencies and of trying him out as to his most promising road towards vocational competence.

Experience with this wide range of men, at least half of them below the median from the educational standpoint, and all of them below par from

the physical standpoint, has demonstrated that from the economic aspect alone, the salvaging of men is an investment which brings in colossal returns. Were the work of soldier rehabilitation eventually to cost the Government half a billion dollars, it will bring back to the country in increased earning capacity of the men so trained, at least four times that sum.

The social good resulting from rehabilitation, however, is far beyond its economic results. To leave a disabled man, especially one disabled in the service of his country, to carry throughout his remaining years the burden of his handicap is not simply a waste of potential man-power; it is a social injustice under which the spirit of the man rankles and festers.

Thus neglected, he would feel justified in assuming the rôle of a parasite either upon the Government or upon society and there would thus be created a body of pensioners and beggars which, while living upon the taxes or the alms of their fellow-citizens, would carry always a deep-seated grudge against society for having compelled them to be liabilities instead of assets in the body politic. Like any other social sore, such a disaffected body would be not only evil in itself, but would infect a widening circle of others incited by this injustice to hostility against the whole social order or debauched by its example into a similar attitude of dependency.

To make deliberate and far reaching plans for rehabilitating the com-



The Ohio Mechanic Institute, where handicapped men earn their way as lithographers.





This room was especially constructed for Federal Board training. The men receive eight dollars a week to start, increasing as they gain facility.

paratively large body of men disabled in the World War, to relieve them, while being trained, from financial anxieties, and to see to it that they are not only restored as wage-earners but are cured, so far as may be, of deficiencies of language and of lack of knowledge of those other attainments essential to good citizenship, has saved the United States from that worst of menaces, a widespread disaffection rooted in clearly recognized injustice. The case for the industrially disabled is not so clear, of course, as for those injured in a war for national preservation. It is equally plain, of course, from the economic standpoint; but from the social point of view one must go a little deeper to find full justification. That justification rests on the fact that, while a certain proportion of civilian disabilities are due solely to a man's or woman's own carelessness or defiance of the laws of health, by far the greater number are due wholly or in great part to the conditions of economic or social life over which the individual has absolutely no control, but concerning which society could, if it chose, exercise far greater watchfulness than in fact it does. In other words, the vast majority of accidents and of disabling diseases are due to the increasing complexities of modern life only in slight degree controlled, as yet, by social regulation. So large a proportion, therefore, of civilian disability is the fault of society rather than of the individual, that there is as substantial justification, from the social stand-

point, for the rehabilitation of those disabled in the normal pursuits of peace as for those injured in the abnormal pursuits of war.

Whether, therefore, we view rehabilitation from the purely monetary aspect, that of conserving workers who heretofore have been most wastefully thrown aside, or whether we regard it from the deeper and more enduring point of view of the good of civilization, it is seen to justify itself as one of the most important forward steps towards social well being that this country has ever taken. Theoretically, the arguments are unanswerable, and practically, those arguments have been proved as sounder even than their advocates believed, by the satisfactory economic and social results already achieved in connection with the rehabilitation of ex-service men. With such a demonstration as this, the states should have no hesitation in providing a generally similar scheme of rehabilitation for the immensely greater number of those disabled in the pursuit of their vocations or of their avocations, or even in the hazardous process of getting, under modern traffic conditions, from one place to another.

### Trains Dental Hygienists

A course for training women dental hygienists will be offered at the University of Pennsylvania Dental School, in September, at the request of the State Department of Health. The purpose of the course is to train women to serve as teachers in schools, hospitals, and private dental offices,

and to make them capable of thoroughly cleansing the mouth and teeth, and discovering the need of expert dental attention.

### A Challenge to Conscience

In the United States in 1919 one mother died for every 185 babies born, and every eleventh baby born died before he was a year old. That these rates are excessive is shown in "Save the Youngest," a bulletin issued by the United States Department of Labor through the Children's Bureau, and just revised to compare the latest rates for the United States with those for foreign countries.

Six countries are shown to have a lower infant mortality, and sixteen in a group of seventeen—a lower maternal mortality than the United States. Not only do we lose more mothers in proportion to births than practically any other civilized country, but we apparently lose more on an average each year than the year before. Whereas in other countries there has been a decrease in the death rate from childbirth, the rate in the United States rose from 6.1 per 1,000 births in 1915 to 6.2 in 1916, 6.6 in 1917 and to 7.4 in 1919. Moreover, in this country there is no appreciable decrease in the proportion of babies who die from causes largely connected with the care and condition of the mother.

Experience has proved, the bulletin points out, that thousands of deaths of both mothers and children could be prevented every year by public measures for the protection of maternity and infancy. In New York city among 4,496 mothers who were supervised by the New York Maternity Center Association before and after the birth of their babies, the maternal mortality rate was less than one-third the rate of the United States and the rate for deaths in early infancy was less than half that for the city as a whole. In other cities of the United States and in foreign countries the institution of infant welfare measures has been followed by greatly decreased rates.

Measures which have proved successful in preventing this waste of life among mothers and babies include the following: Prompt and accurate birth registration, health centers, public health nurses, special clinics, trained attendance at childbirth, adequate hospital service, education of the mother in maternity and child hygiene, and education of the general public in the significance of an necessity for maternal and infant health.



# The Health and Welfare of Postal Employees

AN INTERVIEW WITH HON. WILL H. HAYS, POSTMASTER GENERAL, WASHINGTON, D. C.

THE announced intention of Postmaster General Hays to improve working conditions of postoffice employees has attracted much attention throughout the country. Mr. Hays' statement that he intends to have a Welfare Department in the Postal Service with as definite duties as those of any other branch of work has brought much speculation as to the manner in which the Postmaster intends to carry out the work. The appointment of Lee K. Frankel, vice-president of the Metropolitan Life Insurance Company, and one of the best known experts in health and welfare, as head of the new Welfare Bureau, has just been announced as the first step in the new program.

In response to a request from the *NATION'S HEALTH*, Mr. Hays, for the first time, outlined his plans for the new Welfare Department. He says:

"I have visited some of the larger post offices and viewed working conditions personally. I have had a number of postmasters from the larger post offices, representatives of the employees, and welfare workers from several large industrial plants in conference concerning welfare work in post offices.

"From my own observation, and what has been gathered from the conferences of postmasters and employees, it is very certain that a great program of improving working conditions among the employees of the Postal Service awaits us.

"We are going to have a welfare department in the Postal Service just as definite in its duties and certain in its functioning as the fiscal department or any other department. It will be in charge of an individual competent to look after it, doing nothing else. Every other large industry in the country has adopted welfare measures. This humanizing business is not original. It has been the definite trend of American business for the past generation. Just how far I can go with it in the Post Office Department I don't know, but it is certain that very much can be done and not in any sense in lieu of wages. All the things that are done successfully for the welfare of the employees in other successful business must be done as far as possible in this, the greatest of all businesses. Why it has not been seriously undertaken be-

fore in the Post Office Department it is difficult to understand. It is certainly one of the very definite purposes of the days just ahead. If we can improve the spirit and actual conditions of the 300,000 men and women who do this job, that in itself is an accomplishment, and it is just as certain to bring a consequential improvement in the service as tomorrow's sun.

"The question of providing facilities to improve working conditions of employees has been left to each individual postmaster of the larger postoffices, numbering several thousand. It is unfair to expect this initiative on the part of these postmasters, although I was pleased to learn that some postmasters at the larger offices had provided certain benefits to employees at their own private expense. But for the most part welfare work is almost unknown in the Postal Service. This is not unnatural, when the limitations in Government are known.

## Definite Limitations

"The post office buildings are under control of the Treasury Department, not the Postoffice Department. When a dark, dingy room needs painting to give light to it; when alterations are necessary to give ventilation; when space is required for a rest room and a lounge to place in it, these things must all be obtained through another department of the Government.

"If first-aid remedies are required; if a chiropodist is engaged to look after the feet of such employees as carriers or distributors; or the use of a woman attendant for the women employees is desired, more or less restrictions operate against obtaining these. All of these benefits and very much more in the direction of welfare work are provided by private institutions for their employees with full public approval and commendation. To these wise managers of private business it is not alone altruistic, but plain common business sense. To propose something like this among Government employment meets with the prejudice of some that the Government employees have sinecures and fat jobs and are not entitled to this consideration. There is no occupation in any line of work which calls for a higher grade of intelligence and for more real, hard labor than in the

Postal Service. The postal workers are a hard working class of employees. We have just got to get away from the idea that Government employees are to be less favorably treated than those in private employment.

"The one most important element in any service is the spirit of the men doing it. And we must get away in the post office service from any idea that labor is a commodity. I would reiterate the suggestion that that idea was abandoned 1921 years ago. I am determined in all seriousness to go to great lengths to develop the spirit in the Department that we are three hundred thousand partners. The working conditions, in many places, are unsatisfactory and a large amount of work must be done in that direction. There is no doubt about the quality of our employees. They have the brains and they have the hands to do this job well, but some place along the line the heart has been lost out of the works.

## Institution for Service

"I have said that it is my opinion that the Postal Establishment is most certainly not an institution for profit nor for politics, but an institution for service and it is the President's most earnest purpose to improve that service. You can't expect men and women to give service if they are to be shuttlecocks of politics. It would be my very greatest satisfaction if in this effort I contribute a little to the end that the Postal Service be made more and more a desirable career into which the young enter with a certainty that their service will be performed under reasonable conditions for a reasonable wage and for an appreciative people. The men and women who constitute the great army of employees are doing a distinct Government and public service and they are entitled to an appreciation commensurate with the efficiency and importance of that service. The first element of a proper appreciation is to make certain that honest and efficient service shall be honestly recognized and that the merit system shall control without any subterfuge under any circumstances whatsoever. I have said, and I repeat, that my purposes are: (1) To make such rectifications as in all decency and fairness must be made to assure a

square deal; (2) to strengthen and broaden the Civil Service at every point wherever possible to the end

that merit may govern; and (3) with absolute fidelity to put the entire service upon a purely business basis so

sound and so serviceable that no political party will ever again dare attempt to ignore or evade it ultimately."

## A Child Welfare Station in France

By A. C. BURNHAM, M.D., PARIS, FRANCE.

**O**F INTEREST to Americans because founded in part by funds furnished by the American people, and because it represents a particular phase of the after-the-war movement for the improvement of health, the child welfare station shown in the accompanying illustrations serves as a tangible evidence of what has already been accomplished and gives every indication of a continuation and ultimate extension of the work.

The official name of the station is the *Ecole de Puériculture de la Faculté de Médecine de Paris*. It is called a school rather than a clinic or health station because it is used not only for the care of children but also for instruction of both medical students and visiting nurses.

### Franco-American Foundation

The *Ecole de Puériculture*, located in the city of Paris, was started in January, 1920, upon what is known as a "Franco-American Foundation." The grounds, buildings, and personnel were furnished by the French, while America, through the American Red Cross, contributed a substantial sum of money which was turned over to the *Faculté de Médecine* for the installation of equipment and conversion of the buildings to their present use.

As will be seen by the pictures, the buildings consist of several one-story wooden buildings connected by a cen-

tral corridor. These buildings were formerly barracks and were occupied as such during the war. They are not unlike thousands of similar barracks in the United States, but are of interest because they demonstrate a definite peace time use for buildings of this type. They have been lined with half inch sheathing, joined together by a central passageway, and piped for water and sewage disposal. They are lighted with electricity and heated by a number of coal stoves. One pavilion is devoted to administration offices; one to admission of patients and social service; one to children less than three years of age; one to older children; and one to prenatal cases. There are also a lecture room, clinical and x-ray laboratories, and a well equipped dental clinic.

To the American reader there is nothing unusual about the building except that it compares very favorably with the average out-patient dispensary, and that it represents one method of utilizing the temporary barracks left vacant after the war.

The most interesting thing about this particular dispensary is that its work is limited entirely to prevention. It is what might be called a "well baby dispensary." Children are weighed, examined, and advised as to food, exercise, etc., excepting advice as to feeding for cases of undernutrition, little or no treatment is furnished. Sick children are either

sent to hospitals or referred to private physicians. The *Ecole de Puériculture* is a preventorium in the sense that children are reached before they become ill, and the attempt is made to keep them in good health.

There are three separate services; one for prenatal care, another for nursing mothers and infants, and the third for children from three to six years of age. In addition there are what is known as the "Service des Spécialités," which includes radiography, dentistry, laryngology, and clinical pathology. In addition there are departments of nursing instruction, social service, athletics, and distribution of milk. During the last year 1,909 families were under observation.

The prenatal clinic is held twice a week. Expectant mothers are examined and advised. Extra feeding in the form of milk may be furnished, but no attempt is made to treat pathological cases, nor to care for the actual delivery. Accouchements are made either by private physicians or in hospitals.

The clinic for young children and nursing mothers is held daily. The attempt is made to continue breast feeding in every case. If necessary, the mother may be given extra food; or, if thought advisable, milk may be furnished the baby for supplementary feeding. The clinic for older children is held once a week and the special



The bottle sterilizing room, showing the milk bottles on racks for drying. Milk is distributed from this station to under-nourished children.



Typical mothers with their babes in the waiting room of the infants' clinic. Note the healthy appearance of the babies and the expectant interest of the mothers.

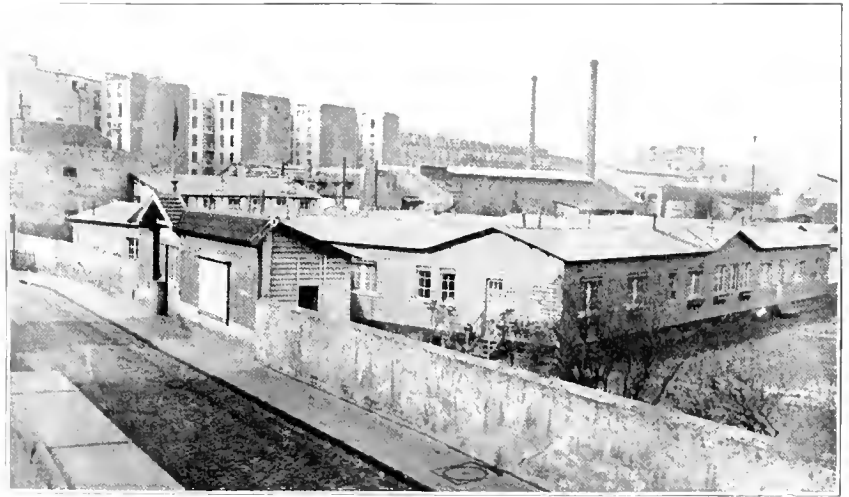
services once or twice a week as may be necessary to cover the requirements of the service.

At the clinic for nursing mothers and infants, there was a total attendance of 4,962 during the year and at the clinic for older children 1,006. The prenatal clinic which is held twice a week had a total attendance of 1,121 (visits). The special services were not started until late in 1920 so that the total figures for the year are not available.

The Ecole de Puériculture is said to be the first school in France to offer an official diploma for instruction in visiting nursing. The course is for one year and is open to nurses who have had preliminary training. The course includes classes in child hygiene, milk modification, visiting nursing, social service, etc. The Faculté de Médecine offers a diploma to those nurses who complete the course. There is also a shorter course leading to a certificate. Visits are made to the homes by nurses, who have completed training, accompanied by one or more student nurses. During 1920, a total of nearly nine thousand visits was made.

### Personnel

The character of the physicians associated with this work is such that its success is assured. Professor Pinard is director, and Professors Couvelaire, Merfon and Leon Bernard are in charge of the various services. Doctor Weil-Hallé is secretary of the faculty and assistant chief of the service for infants and nursing mothers. Twelve other physicians serve in the various clinics and special services. Including the permanent nursing personnel and non-medical employees, there are a total of twenty-five other persons who either devote part or full time to the work of the school.



Ecole de Puériculture, Paris, showing the use of military barracks: Child welfare, medical instruction, and training for nurses.

One of the most important forms of welfare work undertaken by this institution has been the distribution of milk to undernourished children. The city of Paris furnishes milk free of cost to children who require additional feeding. The only requirements are that the child's parents are financially unable to purchase extra milk, and a physician's certificate that such extra food is necessary. The Ecole de Puériculture has undertaken the examination of children in three wards in Paris and the distribution of the milk to such children as require it. The child must visit the clinic for examination at least once a month so that progress may be observed. The quantity ordered by the physician is sterilized and bottled at the milk station in connection with the Ecole. The milk bottles suitably labeled with the child's name are delivered to the local grocery stores where they may be easily called for. This service has been of great value to both the clinic and the city. It has enabled the clinic to keep definite records of children

before the school age, which are usually very difficult to secure. It has also made it easy for the city to get the free milk into the hands of those who most deserve it.

The entire experiment represents a distinct forward step in preventive medicine in France. While it is as yet too early to obtain comparative morbidity and mortality statistics, the value of the work from an educational standpoint is plainly apparent.

The character of the work done during the first year promises excellent results in the development of the child welfare program throughout France.

The thoroughgoing effort to obtain in every case the full background of causes makes the work of child care in France a social study of immense value, its relief a social experiment on unprecedented scale, and the concurrent awakening of public conscience and public initiative in prevention as well as cure marks the rise of a new social ethics.



Entrance to the Social Service Department. The mothers are entering with their babies.



The baby carriage garage. Mothers bring their children for instruction and advice in order to prevent illness.

# Masonic Hospital Rebuilds Crippled Children

By S. P. MOORE, CHICAGO

A BRIGHT spot that appears in the somewhat discouraging outlook upon the general inadequacy of state and private provision for the care of life's handicapped appears in the many evidences of a broadening conception of what such service really should include.

Formerly the social attitude toward men who were crippled in war was one of commiseration, but the only palliation offered was a pension pittance that meant dependence always. For the industrially crippled, the situation was even more hopeless and they were the vicarious sufferers of a system that took no consideration of either cause or effect, fixed no responsibility, and attempted no remedy.

For the crippled child, formerly regarded as accursed of God, long subjected to neglect, there was finally provided physical care and, eventually, as orthopedic measures became more precisely adapted, corrective surgery gave the little crooked bodies a better chance.

But an attitude more spiritual and more creative in approach marks the recent attempts of society to discharge its obligation to the crippled child. It is by no means adequate service to see that these unfortunates are properly housed and fed. Not even the correction of remedial deformities is sufficient.

In a recent book on "Child Welfare from the Social Point of View" Nora Milnes<sup>1</sup> discusses the economic back-

ground of conditions which cause undue suffering on the part of the handicapped child. "Brought into the world without its desires having been consulted, condemned, unless help be forthcoming, to live a life of suffering, the child makes an appeal that only the hardest can resist. No man and no woman can see a child suffer without themselves suffering. The sick child is probably the saddest of all sights; ill before he is old enough to find solace in those occupations that at least shorten the days of convalescence for those who are older; ill when too young to describe what he is feeling, and perhaps ill through preventable causes, he forces a claim upon the sympathies that the sickness of those who are older can never arouse, and from this root of sympathy there blossoms a determination to alter life."

When the needs of the crippled child are fully met, there will be involved preventive medicine and social measures to remedy malnutrition and many of the basic causes of deforming conditions in children.

Even at best, the end results, physically, for the crippled child are problematical, and corrective measures extend over such prolonged periods that unless his education proceeds parallel with his treatment, he is unhappy and discontented from lack of occupation, and is retarded mentally so that what in the first instance was a physical drawback becomes a hopeless handicap in any competitive effort, either in earning a livelihood

or in those creative efforts which are the final expression of real living.

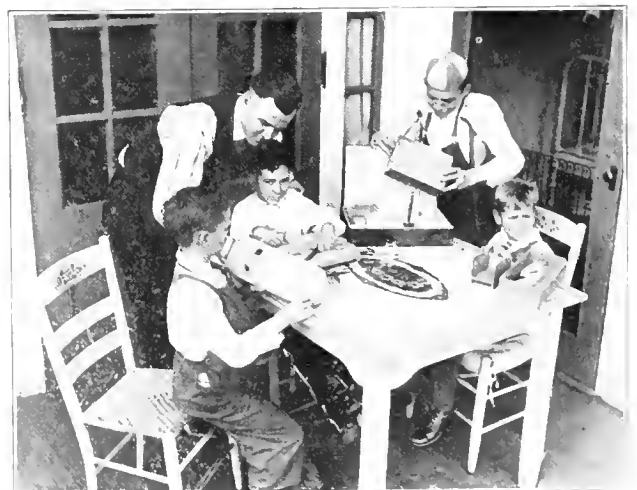
The keynote of the reconstruction undertaken by such institutions as the Scottish Rite Hospital for Crippled Children at Decatur, a suburb of Atlanta, Ga., is that in these children the privilege of individuality is recognized. The utmost orthopedic skill is combined with appropriate régime under the most favorable circumstances is employed without interruption of their general education. There is also such special training as the particular handicap and economic need of the individual may indicate; but, aside from any immediate or future need to compete with others in earning a livelihood, such a course gives these crippled children the advantage of intellects fully trained and of mental resources which are productive of a balanced and normal attitude toward life.

It is coming to be appreciated that even a marked deformity is destructive of personality only when through neglect it is permitted to repress individual development. Hence the significance of any single enterprise which takes care of the handicapped children of a given group, and the great social value of wider movements like that in Iowa, where responsibility is assumed by the state in such matters and through the medium of the University of Iowa the medical and educational departments unite to extend complete care to all indigent crippled children within the bounds of the state.



Underwood & Underwood.

The process of making a little crippled child into a strong, active, happy and useful man.



Underwood & Underwood.

What is the meaning of a life that is deprived of all stimulus of competitive effort?

# National Health Departments in Review

BY HOMER N. CALVER AND JAMES A. TOBEY, WASHINGTON, D. C.

HEALTH has been a matter of public concern from very early times. The ancient Hebrews had a system of medical police, the Greeks appointed public physicians, and the Romans are famous for their public sanitary engineering. Probably the first real Board of Health was that of the Venetian Republic, appointed in 1348 as a result of the ravages of the Black Death. In 1762 a sanitary council was established in every Prussian province and England passed a number of health laws at the beginning of the nineteenth century. The second great pandemic of cholera from 1840 to 1850 resulted in the organization of *Conseils d'Hygiène* in France in 1840 and the Public Health Act in England in 1848. The first board of health in this country was that of Louisiana, established at New Orleans in 1855, and followed by those of Massachusetts in 1869, and California in 1870. The yellow fever epidemic in 1878 led Congress to create a National Board of Health, which went out of existence because of lack of appropriations. Its place was taken by the United States Marine Hospital Service in 1883, which became the United States Public Health Service in 1912.

## Society Fosters Health

Today practically every civilized country takes official recognition of its responsibility to protect the public health and maintains a national organization for that purpose. In most cases the health functions are

placed under the jurisdiction of a government department, such as the Ministry of the Interior, and constitute a bureau in it. In every country there is generally at least some form of local health administration. Sometimes, as in our own country, several government departments perform health functions. As knowledge regarding the science of government advances, however, nations begin to realize that efforts to preserve and promote health should be efficiently coordinated and administered. To this end there have recently been established a number of Ministries of Health, the executives of which are responsible directly to the head of the government.

There are at present about a dozen such independent national health departments. In the following pages will be presented a brief review of each, followed by a list and data on other countries the health departments of which are not yet full fledged independent ministries. This review is not a survey of world health activities. Such a study, showing the administration, finance, operation, functions, and results of *all* health departments of the world would be interesting, valuable, and would represent a stupendous piece of work, which some organization of international scope may some time find it worth while to make.

The data presented below has been gathered from reports, articles, from embassies in Washington and, with respect to South and Central Amer-

ica, from the Pan-American Union. It has been in process of collection for some time and since changes in governmental procedure are likely to be rapid in these days and no respecters of writers of articles, there may be some inaccuracies. If so let the magnitude of the task of attempting to keep in touch with mundane health activities excuse them.

## Independent Departments

(A) *Great Britain.*—In England and Wales the Ministry of Health was established on June 3, 1919, and on July 1, 1919, took over all the powers and duties of the Local Government Board, the Insurance Commission, the Welsh Insurance Commission, and the powers of the Privy Council relating to midwives. The powers of the Board of Education regarding the health of mothers and young children, and of the Home Office in relation to infant hygiene, were transferred to the Ministry on October 1. On December 1, the powers of the Board of Education with respect to medical inspection and treatment of children and young persons were taken over, though parts of this work were to be carried out by the Board under the direction of the Ministry. In May, 1920, other health functions of the Home Office, the Secretary of State, and the Board of Education were transferred to the Ministry. There are eight departments in the Ministry of Health, as follows: general health and epidemiology, maternity and child welfare,



Pan-American Union.

Snake houses and buildings of the Butantan Institute at Sao Paulo, Brazil, where serums are developed for the cure of snake bites. This institute occupies a tract of several hundred acres.



Pan-American Union.

Medical inspection of school children in Brazil. The health service of Sao Paulo, Brazil, is well developed. It is housed in a specially constructed building.

tuberculosis and venereal diseases, supervision of food supplies, general practitioners' services, sanitary administration in relation to infectious diseases, Welsh Board of Health, and the special medical staff. The Chief Medical Officer is Sir George Newman and he has a staff of nearly one hundred health workers. The first annual report of the Ministry has recently been issued in four parts, namely: Part I, dealing with public health, local administration, local taxation and valuation; Part II, with housing and town planning; Part III, with administration of the Poor Law, the Unemployed Workmen Act, and the Old Age Pension Acts; Part IV, with the administration of National Health Insurance, and the Welsh Board of Health. Scotland and Ireland have Ministries of Health similar to that described above.

The Dominion of Canada has a federal department of health under the administration of a minister. This department has a division of quarantine service, a division of medical inspection of immigrants, a division of marine hospital service, and a division of food and drug laboratories. The quarantine service is divided into the Inside Service, headed by the Director General of Public Health, and the Outside Service. The bureau of statistics is in the Department of Trade and Commerce. Of the nine Canadian provinces, which correspond to our states, New Brunswick has a Ministry of Health, Alberta a Ministry of Municipalities and Public Health, Ontario a Ministry of Labor and Health, and the others are without such organizations.

New Zealand has a department of public health in charge of a minister, who is also Attorney General, Minister of Immigration, Minister of Education, and Minister in Charge of Hospitals.

None of the other British possessions have national independent departments. Of the six states of the Australian Commonwealth, Victoria has a ministry of Public Health and Labor, and Western Australia has a Ministry of Education and Public Health.

(B) *France*.—France has a Ministry of Hygiene, Assistance, and Social Welfare, which was created under the Millerand Ministry in January, 1920. As a nucleus, the new Ministry of Hygiene took the Bureau of Public Assistance and the Bureau of Public Hygiene from the Interior Department, and the Bureau of Social Welfare from the Labor Department. The program includes repopulation,

reduction of infant mortality, control of communicable diseases, anti-tuberculosis work, venereal disease control, installation of dispensaries, hospitals, and sanatoriums, anti-alcoholic work, and housing. The Minister of Hygiene, M. J. D. Breton, is a chemical engineer.

(C) *Czecho-Slovakia*.—The Ministry of Public Health and Physical Education (Ministerstvo Verejného Zdravotníctva a Tělovýchovy) was organized in 1918 after the constitution of the new republic was adopted. Previously Slovakia has been in the jurisdiction of the ministry of public health of Hungary and Bohemia, Moravia, and Silesia belonged to the corresponding ministry of Austria. Various laws, including obligatory vaccination, rules for cremation, and requiring medical examination previous to marriage, have

been passed. The general headquarters are at Warsaw. There is also a Children's Bureau in the Ministry of Labor.

(E) *Serbs, Croats, and Slovenes*.—There is a Ministry of Public Health in this kingdom. The Ministry of Social Politics has charge of the health problems of the half million war orphans through its Department for the Protection of Children and Youths. The Ministry of War also has a Department of Sanitation.

(F) *Brazil*.—The National Department of Health (Departamento Nacional de Saude Publica) is an independent department under the president. It has the following bureaus: (1) administration, (2) maritime and fluvial sanitation and prophylaxis, and (3) rural sanitation.

There are also sections on statistics, sanitary engineering, leprosy,



Where ancient is modern and modern is ancient. The old Roman aqueduct at Kavella, Greece, brought water to the city from the mountains. It is no longer used. The present supply is taken from highly polluted wells and sink holes and is conveyed in jugs such as are being carried by the women in the foreground.

been passed. Special councils for the famous cure places, for the control of tuberculosis, for control of alcoholism and venereal diseases, have been created. A Pasteur institution and hygienic laboratory have been established. The International Health Board has sent Prof. S. M. Gunn of the United States as technical adviser to the Ministry. Czecho-Slovakia also has a Children's Bureau in the Ministry of Social Welfare. A description of this bureau and that of Poland is given in the Eighth Annual Report of the Chief of the United States Children's Bureau (1920).

(D) *Poland*.—The Ministry of Public Health has the following departments: (1) Public hygiene, (2) child hygiene, (3) health institutions, (4) pharmacy, (5) veterinary and sanitation, (6) food, and (7) general sanitation. There are seven health dis-

tributions, medicine, pharmacy, dentistry, midwifery, food inspection, tuberculosis, hospital assistance, and child welfare. This department was created by a law signed by the president on May 26, 1920. According to latest advice, supplementary legislation to enforce it has not yet been passed, though appointments have been made.

(G) *Cuba*.—Cuba has a Department of Public Health and Charities, under a cabinet officer.

(H) *Santo Domingo*.—This country has a national Department of Sanitation and Beneficence, which was created by law January 1, 1920.

#### Non-Independent Departments

*Belgium*.—The Health Department in Belgium is styled the Administration of Public Hygiene, and its direction is under the auspices of the Min-



istry of the Interior. It consists of four bureau: (1) hygienic works, (2) hygiene, (3) manufacture and commerce of food, and (4) the hygiene and health service laboratory. There is also a national children's bureau, directed by a board of forty members.

*Denmark.*—The National Board of Health administers the health work of Denmark with the Ministry of Justice in charge. This Board has no executive authority and is largely advisory. It calls the attention of local authorities to transgressions of law and inefficiency in health matters, but can take no action.

*Greece.*—The Medical Council of Greece assumes responsibility in health administration under the Ministry of Interior. The council concerns itself only with the suppression of alarming epidemics arising from time to time. There is in the Ministry of Communications, an agency for combating malaria. The Director of Public Health, who is not a physician, has an advisory council of fifteen physicians.

*Finland.*—This country has a Bureau of Medicine under the auspices of the Ministry of Interior.

*Italy.*—In Italy all health activities are the function of the General Board of Public Health (Direzione Generale della Sanita Publica) under the auspices of the Ministry of the Interior.

*Netherlands.*—The Central Council for Public Health in the Netherlands is organized under the direct supervision of the Ministry of Labor and includes three chief inspectors and seventeen inspectors of public health. The Dutch public health work is regulated by an act of June 21, 1901. The Central Council consists of three chief inspectors, seven ordinary and fifty extraordinary members. There are also public health committees in every municipality of 18,000 inhabitants or more and in combinations of communities, the total population of which amounts to not more than 40,000. The members are nominated by the Central Council and appointed by the governor of each province. They advise the local and municipal authorities and the chief inspectors. The Central Council acts in an advisory capacity on public health to the government, undertakes research, and keeps a register of physicians and allied professions. The inspectors carry on the active work, assist the public health committees, make investigations, and exchange information on disease and similar matters.

*Norway.*—The administration of

public health in Norway is effected through a Division of Health, Hygiene, Sanitation, and Medicine. Its chief office is styled the Ministry of Social Affairs.

*Roumania.*—The department having in charge the health work of Roumania is called General Health Direction, with authority under the Ministry of Interior. There is said to be a strong movement to raise this department to the rank of a ministry.

### Health Under Soviets

*Russia.*—Russia has a Commission of Public Health under the Soviet government. This Commission is composed of fourteen sections, as follows: medical, sanitary and epidemiological, balneology, maternity and child welfare, general material and supplies, medical material, pharmacy, military medicine, naval medicine, railway medicine, medicine for waterways, finance, general administration, and elementary instruction in hygiene. It is interesting to note that a special section is devoted to the subject of baths. In the provinces there are apparently local medico-sanitary commissions which concentrate in themselves the sections on medicine, sanitation and epidemiology, supplies, etc. These local commissions have also taken over the work of the old federal, departmental and municipal departments of medicine.

*Spain.*—In Spain four bureaus are charged with health functions: (1) Royal Council of Public Health, (2) Section of Civic Public Health, (3) Alfonso XIII Institute of Hygiene, and (4) Ports and Quarantine. The Ministry of the Interior is the authoritative body. The Royal Council consists of the Minister of the Interior, a vice-president, secretary, keeper of records, eighteen directors by right of birth, and thirty-three directors by election.

*Sweden.*—The Royal Administration for Public Health (Kungl. Medicinalstyrelsen) of Sweden is constituted a part of the Department of the Interior. It has six bureaus: (1) the Veterinary Bureau; (2) Bureau for Asylums; (3) the main Bureau (hospitals, pharmacies and dispensaries); (4) the Public Health Bureau; (5) the Administrative Bureau, and (6) the "Medicinalbyran," for matters concerning appointments of physicians the Civil Service, the exercise of medical art, criminal medicine.

*Japan.*—Governmental health activities of Japan are concentrated under the Sanitary Bureau, with authority under the Department of the

Interior. The services are organized into four bureaus for: (1) prevention of disease, (2) quarantine, (3) supervision of physicians and allied professions, and (4) hospital supervision. In addition to the bureaus mentioned there are three special branches, one for the investigation of public health methods, one for the study of medicinal plants and the production of medicine, and one for the encouragement of the manufacture of medicine and dyestuffs.

*Persia.*—A twofold organization exists in Persia, namely, (1) Sanitary Council, and (2) Bureau of Health and Municipality. They are under the auspices of the Ministry of Education, and the Ministry of Interior, respectively. The Ministry of Foreign Affairs also has a sanitary section which deals with external health problems.

### American Types of Service

*Argentine Republic.*—The National Bureau of Hygiene (Departamento Nacional de Higiene) is organized under the auspices of the Ministry of Interior. It has bureaus of: (1) maritime and fluvial sanitation and prophylaxis; (2) internal sanitation and prophylaxis; (3) school, social, industrial, and child hygiene; (4) dental medicine, supervision of the practice of medicine and allied professions; (5) bacteriological institute, chemical institute, and institute of smallpox vaccine; and (6) disinfection and drainage. The work carried on includes anti-malaria activities, inspection and disinfection of railway trains, anti-tuberculosis campaigns, school inspection, and special investigations.

*Bolivia.*—In Bolivia there is no special board of health. Such health functions as are exercised are under the auspices of the Ministry of the Interior.

*Chile.*—Health work in Chile is achieved through the Administration of Health (Direccion de Sanidad) under the Ministry of the Interior.

*Colombia.*—The Central Council of Hygiene (Junta Central de Higiene) is included in the Ministry of Public Education.

*Costa Rica.*—The Department of Health and Hygiene (Departamento de Salubridad e Higiene) of Costa Rica is under the auspices of the Ministry of the Interior and Police.

*Ecuador.*—Health work in Ecuador is confined to the Sanitary Section (Seccion de Sanidad) under the Ministry of the Interior.

*Gautemala.*—In this country health is administered by the Superior Board

of Health (Consejo Superior de Sanidad) under the Ministry of Interior and Justice.

*Haiti*.—The health department of Haiti is styled the Sanitary Service, being a bureau in the Department of Public Works. This bureau is in charge of an American engineer. There is also a medical council which controls certain phases of public health and the practise of medicine and pharmacy. At present, an officer of the Medical Department of the United States Navy acts as chief health officer of the Republic.

*Honduras*.—The Bureau of Hygiene and Health (Departamento de Higiene y Salubridad) of Honduras is under the auspices of the Ministry of Interior and Justice.

*Mexico*.—The Superior Board of Health of Mexico is under the auspices of the Ministry of the Interior.

*Nicaragua*.—The National Department of Health of Nicaragua is constituted a part of the Ministry of the Interior. Each department of the national department is divided into subcommittees corresponding to the states of Nicaragua, an organization similar to conditions which obtain in the United States.

*Paraguay*.—The health department of Paraguay is called the National Bureau of Hygiene (Departamento Nacional de Higiene).

*Panama*.—Health activities in Panama are concentrated under a National Board of Hygiene (Junta Nacional de Higiene).

*Peru*.—In Peru the Administration of Public Health (Direccion de Salubridad Publica) is under the auspices of the Ministry of Development (Fomento). The department has an Institute of Hygiene with bacteriological and chemical departments. There is also a department of military hygiene of the Ministry of War.

*Salvador*.—Here there is an official Superior Council of Health (Consejo Superior de Salubridad) under the auspices of the Ministry of Interior and Public Works.

*Uruguay*.—The National Board of Health (Consejo Nacional de Higiene) is under the auspices of the Ministry of the Interior in Uruguay, with the following bureaus: (1) medicine—legal and professional; (2) maritime sanitation; (3) inland sanitation; (4) hygiene of public establishments and foodstuffs; (5) industrial hygiene and collective dwellings; (6) school hygiene and hospital hygiene; and (7) salubrity, drainage, and public works.

*Venezuela*.—In Venezuela there is an officially constituted Bureau of

National Health (Oficina de Sanidad Nacional) under the auspices of the Ministry of Interior.

### United States Organizations

The health activities of the United States government are rather widely scattered, every one of the ten cabinet departments, either directly or indirectly, doing health work. In the Treasury Department is the Public Health Service, which performs the greatest amount of the health work in this country. The Treasury Department also has the Bureau of War Risk Insurance and the Bureau of Internal Revenue, which enforces the Harrison Anti-Narcotic Act, and the medical work of the Bureau of Engraving.

The Children's Bureau, the Women's Bureau, and the Bureau of Labor Statistics are in the Department of Labor. The Department of Agriculture has a number of bureaus which do health work, including the Bureau of Chemistry, which administers the Pure Food Act; Bureau of Animal Industry; Bureau of Entomology; Bureau of Biological Survey; Bureau of Roads, including sanitary engineering; and States Relation Service, which comprises home economics. In the Department of the Interior are the Division of School Hygiene of the Bureau of Education, the Bureau of Mines, Bureau of Indian Affairs, and the Hospital for the Insane and Freedmen's Hospital in the District of Columbia; it also includes the medical activities of the Pension Bureau, and in Alaska. The Bureau of the Census, responsible for vital statistics, is in the Department of Commerce, as is also the Bureau of Standards, under whose auspices is conducted industrial hygiene. The War and Navy Department each has its own Medical Corps. Besides the bureaus in the cabinets there are several independent bureaus,—as the Federal Board of Vocational Education, the Interdepartmental Social Hygiene Board, the Medical Service of the Government Printing Service, and the Interstate Commerce Commission's Bureau of Safety. In all, there are about thirty separate government bureaus which are concerned with some aspect of public health work.

Austria and Hungary each have bureaus of public health. Germany had a highly organized health bureau before the war and probably still has one, though the authors have collected no data on it. China has no really organized health work under public control, though the new government

has cooperated with private agencies. The authors have no information on Bulgaria, Portugal, or Turkey.

### Health Work Summarized

Of the seventy countries listed in the Statesman's Year Book for 1920, eleven have really independent Ministries of Health, as follows:—England and Wales, Ireland, Scotland, Canada, France, Czecho-Slovakia, Poland, Kingdom of the Serbs, Croats, and Slovenes, Brazil, Cuba, and Santo Domingo. Of twenty-nine others about which reliable data are available, twenty-one have departments of health under the Ministry of the Interior, two under the Ministry of Education, and one each under the Ministries of Labor, Social Affairs, Public Works, and Development. The public health work of the United States is controlled by ten cabinet officers.

### An English Conference on Child Welfare

An English Speaking Conference on Infant Welfare was held in London on July 5, 6, and 7 under the patronage of the Ministry of Health. The main subjects to be discussed are:

- (1) Presidential provision for mothers and babies.
- (2) Inheritance and environment as factors in racial health.
- (3) The supply of milk, its physiological and economic aspects.

Papers were submitted by a number of authorities from all parts of the world. Throughout the Conference a mothercraft exhibition was open from 11 a. m. to 9 p. m., at which the main features consisted of practical demonstrations in important matters relating to infant care. For the benefit of infant welfare workers of all kinds lectures were offered every evening during the Conference on: (1) The ideal maternity and child welfare center. (2) Common infections in mother and child. (3) The tuberculous mother and her infant. (4) The syphilitic mother and her infant. (5) The accessory factors in infant feeding. (6) The psychology of the mother and her child. The need to find in child welfare work the essential social factors has led to many phases of research, both in medicine and economics, which have resulted in health records of enormous value, in districting to serve the whole people through infant welfare and maternity centers, and has aroused a generally awakened interest.

# Housing as it Relates to Public Health\*

Preserve the Integrity of the Home,  
and Give the Children a Place in the Sun

By JOHN MOLITOR, ARCHITECT, CHIEF BUREAU OF HOUSING, PENNSYLVANIA DEPARTMENT OF HEALTH,  
HARRISBURG, PA.

**I**N THE present reconstruction period, nothing is of more importance in safeguarding the public health than housing. Old houses that should be discarded must be used owing to the scarcity and the high cost of new construction.

Houses that must soon be built should be safeguarded by health legislation. We have laws demanding that food, drugs, etc., shall meet minimum specifications, also laws prohibiting short weights and measures being given to the unsuspecting public. It, therefore, seems perfectly natural and necessary that so important a subject as the sanitary equipment of houses and the safeguarding of arrangements for privacy and for the entrance of fresh air and sunlight be subjected to the same kind of intelligent control.

It is a common observation that the tendency of recent years, with the

*No proper perspective is possible in matters pertaining to public health without a precise knowledge of how the people live. A study of disease and of the failures in life usually resolves itself largely into a consideration of environmental conditions which the individual is powerless to control.*

*An abundance of open spaces, plenty of light, and a recognition of the universal necessity for play, along with the development of a sense of civic responsibility for the forces which produce and perpetuate the homeless, yardless tenements, will mark the rise of a better society.*

Ventilation is another important item that indicates the intimate relation existing between good housing and good health. For we find out of a total of 1,389 babies who lived at least one month, that the infant mortality rate was 87.8 for the whole city; of those who slept in rooms rated as well ventilated, the rate was 28.1; of those who slept in rooms rated as poor, the rate was 169.2—a difference of 140 per thousand.

In preparing for the broadening of housing work which must necessarily come, one of the greatest difficulties we have to contend with is the belief of many people that by reducing yards to as small an area as possible in order to build more houses per acre, they are thereby helping to bring down the cost. Someone must say at what point the building up of land area shall cease in order to permit healthful living.



This apartment building has ten rooms which are without light and air direct from the outside.

great development of industry, has been the concentration of population into cities and towns. With no one responsible for solving their housing problem, what has happened? The overcrowding of land with all sorts and conditions of buildings, and the overcrowding of old houses not adapted to new conditions.

It is to be regretted that an absolute measure of the importance of each housing defect can not be deter-

mined; but it is interesting to note in the studies made by the Children's Bureau of the United States Department of Labor on infant mortality in Johnstown, Pa., that in homes where water was piped into the house, the infant mortality rate was 117.8 per thousand, as compared with a rate of 197.9 in homes where the water had to be carried into the house from outdoors—a difference of eighty per thousand; and that in the home of 496 live-born babies where bathtubs were, the infant mortality rate was 72.6, while it was more than double, or 164.8, where there were no tubs.

In dry houses of Johnstown we find the infant mortality rate is 122.5 per thousand, while in damp houses it is 156.7 per thousand. In homes in which there are water closets the rate is 108.3 against a rate of 159.3 for homes that use a yard privy; also homes with clean yards have a rate of 99.9 against a rate of 169.3 for homes with unclean and filthy yards.

The infant mortality rate for the whole city was 134, therefore, in every instance where improved housing conditions existed, the rate was below that of the whole city; while in every instance where the unimproved and bad housing conditions existed the rate was greater than that for the whole city.



This tunnel is the only entrance to twelve apartments

Adequate yard areas in relation to dwellings and especially in relation to buildings used for multiple habitation are not wasting land values, but are the conservation of air movement and of the sunlight necessary for healthful living.

In many towns in Pennsylvania we have overcrowding of land area, where people are crowded in a small section of the town. The lots are built upon in the front, center and rear. The interior houses on the lots are reached through narrow passageways or tunnels, hardly three feet

\*A talk before the Housing Conference, Philadelphia, May 9, 1921.



When public health has to contend with living conditions like this, it must be considered a losing game.



A chronically poor physical condition, not to mention mental stagnation, must result from the effect of this environment.

wide between buildings. We found from fifteen to twenty children playing in spaces of not more than two or three hundred square feet, completely surrounded by houses and batteries of privy vaults; dismal, dreary courts, without sunshine or proper ventilation.

Why is it that our educational authorities in studying schools over the whole eastern half of the United States remark on the pallid complexion of the school children?

### Outsiders in the Home

Those most interested in real estate projects, especially in the construction of small houses, are sincere men, anxious to keep down the cost of small houses, but they are so keenly interested in that phase of the problem that they defeat their own object, for the history of all land development shows that overcrowding invariably produces a rise in land values, forcing rents up so that the small householder must either move out or take lodgers.

Recent investigations of housing conditions throughout the state by the Bureau of Housing reveal the following facts:

(1) Houses and apartments arranged and intended for use by only one family are now housing two or more families.

(2) Conditions of storage warehouses indicates an unparalleled storage of household goods consequent upon the curtailing of family life.

It has been demonstrated that good surroundings pay in the better residence property. Will the housing problem ever be successfully solved until more consideration is given to the creation and permanent safeguarding of neighborhoods of consid-

able area for the man who earns a low wage?

The opening up of yards and areas to furnish open air spaces for the entrance of sunlight and the circulation of air is needed in many old houses as well as the improvement of their sanitation.

Overcrowding of houses means close contact which results in a marked increase in the infant death rate. Infant mortality is much higher in districts where there is the greatest overcrowding. Tuberculosis is more prevalent in overcrowded rooms than where normal conditions of living exist. Approximately from 70 per cent to 80 per cent of tuberculosis cases must live at home as there is not enough institutions to accommo-

date all cases. Overcrowding makes it impossible to adequately segregate a tuberculosis patient. All communicable diseases, especially influenza and pneumonia, are rapidly spread by overcrowding and the difficulty of maintaining adequate quarantine or isolation of cases in tenement houses.

### Where Tuberculosis Occurs

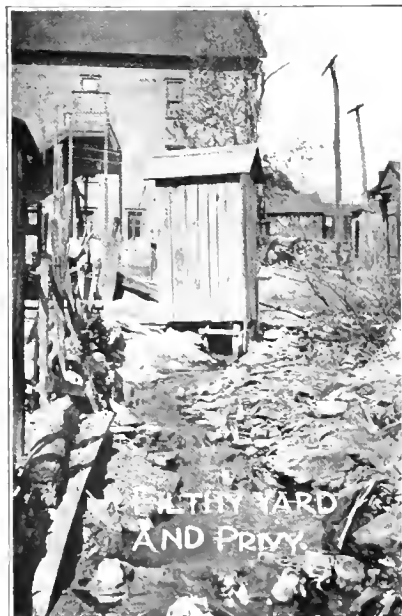
Tuberculosis is a disease which in the majority of cases occurs in houses or apartments of three rooms and under; the number of cases are larger in two room apartments than in three, is larger in apartments of one room than in two; and also the number of cases of tuberculosis and pneumonia increases almost in direct proportion to the number of overcrowded houses or apartments in any district or ward of a city.

If these facts regarding the influence of housing on the origin and spread of tuberculosis be correct, then something more sweeping in the line of preventive work must be done, than has yet been accomplished.

Patients who have been discharged from sanatoriums as cured, must not return to the same living conditions under which they formerly lived when they contracted the disease.

Tuberculosis, pneumonia, and practically all the infectious diseases are not only more prevalent in the crowded dwelling and apartment, but are more apt to be fatal. The infant mortality rate is correspondingly higher.

The studies and conclusions of Dr. Chalmers, Health Officer of Glasgow, if we use infant mortality as an index and indicate the death rate of infants in one room apartments by the figure 100, that the two, three, and four room apartments would be indicated



When gardens grow on spots like this, many public health questions will fall largely into the background.



Can schools make good citizens of children who spend most of their time among these sordid scenes



The problems of the future are inextricably bound up with the housing conditions of the present

by an index of 78, 61 and 49; in other words, the child born in the one room apartment has only half as good a chance for its life as one born in an apartment of four rooms or larger.

It not only happens that the infant death rate, that is of children under one year, is greatly increased in the one room apartment, but it is perhaps equally true that those who escape death are physically handicapped so that in the next period, that is between the first and the fifth year, they are much more likely to be sacrificed to other diseases. These facts are clearly brought out by the statistics of Dr. Chalmers, who shows that between the ages of one and five, the death rate per one thousand for one room apartments is 16.6, for two room apartments only 12.6 and for three room apartments 7.2, for four room apartments and upwards 3.1 per one thousand.

Good housing conditions for health, comfort and good citizenship in apartments, well lighted, ventilated and with sanitary conveniences arranged with due regard for family life; are the right of every family.

Vision and imagination are needed to understand the vast possibilities in multiroom housing, and of the civilizing effect on people which will come by providing them with livable and economical homes. We must fight against ignorance and inertia.

Children very early in life are susceptible to public health education, and if the elementary foundations of sanitary conscience are well laid in the schools, these pupils when fully grown will be the sanitary educators of the next generation.

Weakened bodies indicate a large economic waste. This waste, mainly attributed to poor housing conditions, is quite in line with our great national waste of natural resources, our forest and city fires and our disregard for the future. As an organized and effective conservation is the only

answer to the great wastes of our industrial population, which is the source of the country's real strength. We must be inspired to make possible the right for healthful living; we must recognize the need as economic; we must appreciate the ineffectiveness of our elaborate school system in making good citizens when the housing conditions in which the children live are diametrically opposed to it.

With good housing you will be assisting in establishing elements of personal character, of industry, and of cooperation and enterprise that are essential to a progressive and enlightened citizenship. You will be developing a new patriotism, not tragic as that found upon the field of battle, but more essential than the other in attacking the great industrial, social, and economic problems of the future. To just that extent that we enter into the modern spirit of community promotion, welfare and safety, to just that extent we are lending our efforts, our industry and our lives in building up a new national as well as local life.



The infant mortality of children who slept in rooms rated as well ventilated was 28.1, as against 87.8 for the city as a whole. Ventilate the bedroom.

## New York Nutrition Council Reports

The New York Nutrition Council, consisting of representative members from approximately one hundred different organizations, has after twelve sessions reported on the correlation of nutrition activities, and on training standards for nutrition workers. Copies of the recommendations covered by this report may be obtained from Emma A. Winslow, secretary, New York Nutrition Council, 105 East Twenty-second Street, New York City.

The Committee defines the relationship between nutrition work and adequate medical service, and emphasizes the necessity of parallel educational work reaching both children and adults, and of adequate social work for the diagnosis and treatment of social causes for malnutrition.

The requirements of the situation brought out the needs for extensive study in several directions which is to be undertaken during the ensuing year, at the end of which time their completed report on the problems of correlation will be compiled.

## Practical Preventive Medicine

Dr. Mark F. Boyd, professor of bacteriology and preventive medicine in the Medical Department of the University of Texas, has brought out a book on practical preventive medicine which includes all of the most essential facts of this subject. These facts are clearly stated, the book is well arranged, and constitutes a highly satisfactory introduction to the subject.

W. B. Saunders Company, 1920.

To raise the level of national health is one of the surest ways of raising the level of national happiness. No branch of legislation is more really valuable than that which is occupied with the health of the people.—Lecky.



# Economic Problems in European Health

BY C.-E. A. WINSLOW, YALE UNIVERSITY, DIRECTOR, DEPARTMENT OF HEALTH, THE LEAGUE OF RED CROSS SOCIETIES, GENEVA, SWITZERLAND

**E**VEN in favored America we rightly attribute a considerable importance to economic forces as factors in the determination of the death rate, but one must study at first hand the present health problems of eastern and central Europe, in order to realize fully how overwhelmingly important such economic factors may become.

Typhus fever, for example, is in theory—and, in practice, where resources are ample—an easily controllable disease. Yet Poland is still suffering from a serious epidemic of this ancient pestilence. The Epidemic Commissariat of Poland, with the aid of the Epidemic Commission of the League of Nations, is making a magnificent fight against it. The energy and efficiency shown by the Poles in rebuilding the public health machine destroyed by the Bolsheviks last fall might be a source of pride to any nation in the world. One hundred seventeen epidemic hospitals and 353 field disinfecting columns are already in operation, and admirable quarantine stations have been equipped for the cleansing of the prisoners and refugees now streaming back from Russia. The epidemic is on the wane. Reported cases in January, 1921, were 78 per cent less than in January, 1920. They were 4000 per cent higher, however, than the average for the corresponding month and corresponding areas before the war; and relapsing fever is far more prevalent than typhus. Salvarsan, with which relapsing fever could be easily stamped out, is so costly that only the larger hospitals can be supplied with it. The fundamental habits of personal cleanliness, which alone will serve for the complete eradication of the louse-borne diseases, are quite out of the question in the villages where seven years of war have destroyed the bath houses, where soap is impossible to obtain, and where even firewood for heating water is often lacking. The Hebrew Joint Distribution Committee under the direction of Dr. Plotz, is engaged on an excellent plan of constructive work in the upbuilding of village sanitation in Poland; but the construction of baths and the provision of soap and fuel are the vital economic essentials which must underlie any plan of health propaganda.

In Austria, the influence of economic conditions upon health has been even more overwhelming. In 1912 the city of Vienna had 39,801 births and 32,141 deaths, an excess of 7,660 births. In 1918 there were 19,257 births and 51,497 deaths, an excess of 32,240 deaths. This was, of course, both a war year and an influenza year. In 1919, however, there were still only 24,347 births against 40,932 deaths, an excess of 16,585 deaths, and this condition was almost wholly the result of diseases directly and indirectly due to malnutrition and privation.

Recovery from such a condition is exceedingly difficult. The present Austrian state can produce food only for one-fourth of its population. Its industrial life is hampered at every turn by new political boundary lines which cut straight across the natural paths of trade. The crown has fallen to an appallingly low level. The income of the most fortunate Viennese has only quadrupled while the cost of living has risen one hundred and fifty fold.

There are signs of hope, however, even in Austria. Coal is beginning to come in from Czecho-Slovakia; and unemployment has substantially decreased. The feeding work of the A. R. A. which is being carried out under the direction of von Pirquet, according to his exceedingly interesting "Nem" system, the Child Welfare activities of the Society of Friends, and the multifarious services of the American Red Cross, are beginning to bear fruit. The birth rate is rising in Vienna and the death rate falling, although still showing a net loss of population.

The Austrian situation is not hopeless; but it represents by far the most critical problem of post-war reconstruction which the world must face. It is in very truth a world problem, rather than a purely Austrian problem. There is at stake here, not merely the lives of individuals, but the life of a civilization. Vienna as a center of art and music, of medicine and science, of philosophy and letters, Vienna as the embodiment of a truly rich and warm and liberal culture, stands with Paris as one of the precious flowers of human civilization. Its decay would be an irreparable loss to all mankind. It is to the preser-

vation of this culture, which it has taken centuries to produce, as well as for the immediate mitigation of human suffering, that the best sanitary knowledge and the clearest economic foresight and the fullest generosity of the world must be applied.

## Public Health Women Meet

With members in twenty-nine states, including twelve Federal employees, the Association of Women in Public Health held its annual meeting in Boston under date of June 6.

Miss Gertrude Seymour, correspondent of the Federal Public Health Service, presided at a business session for members. Roll call showed members from Maine, New Hampshire, New York, Pennsylvania, Washington, Illinois and Michigan as well as a large representative from the Massachusetts State Board of Health. Dr. Carro C. Croff, lecturer of the New York State Department of Health, reported for the membership committee and Miss Marjorie Delavan of Michigan for the Bulletin, which has served to introduce the Association and which, she said, will be strengthened and enlarged in the coming year.

Dr. Rachele S. Yarros of Illinois spoke of the value of establishing institutes and classes with the cooperation of boards of health and women's associations, for the purpose of discovering persons qualified for leadership in public health matters.

It was voted to change the date of the annual meeting from December to June, and thus be in line with the American Medical Association convention. Dr. Mary Riggs Noble of Pennsylvania, treasurer of the Association, submitted an outline of a budget for next year, but this matter was laid aside until the late afternoon by unanimous consent.

Miss Seymouthe was re-elected president to serve with the following named officers:

Vice-president, Rachele S. Yarros, M.D., Illinois State Department of Health; treasurer, Mary Riggs Noble, M.D., Pennsylvania State Department of Health; secretary, Mary R. Lake-man, M.D., Massachusetts Department of Health.



# Practical Experiments in Seating in Industry\*

## An Ounce of Intelligent Experimentation Is Worth a Pound of Abstract Argument

BY EDITH HILLES, BUREAU OF WOMEN IN INDUSTRY, NEW YORK STATE INDUSTRIAL COMMISSION, NEW YORK CITY

A TRIP through an average plant is almost sure to disclose startling novelties in the way of seating arrangements. All seats may seem to look more or less alike until



Fig. 1. This shows a makeshift method which has been used to raise the height of a chair.

attention is directed towards them, but then behold the possible varieties! Twenty different kinds of chairs may be gathered together from the same plant; no one of them a really satisfactory seat. They have been purchased at different times by different people for use at different processes, but the only considerations have in all probability been cheapness, durability, and free aisle space. As a result, in many cases improvements have been attempted by the workers; backs have been knocked off or put on; chair arms or cushions have been added; a box or a barrel has been made into a seat; a chair seat has been raised by some such makeshift method as that illustrated in Figure 1, or an ingenious workman has built out a seat from a part of his machine. One industrial engineer has well said that, in his experience, it is wise to

watch very carefully for indications of such adjustments on the part of the workers and that "when stools are found with boards nailed on to provide a crude support for the back; when old boxes or broken chairs are being used under the benches for foot rests, we may be certain that the plant is not being operated at a maximum of physiological efficiency."

The difficulty seems to be not only that very little thought has been given the question of industrial posture, but also, that in most cases it is impossible to scrap old equipment which has been constructed with no regard for the breaking back or the dangling legs of a tired workman. However, it is fortunately coming to be true that "manufacturers who employ large numbers of workmen are slowly discovering that it pays in dollars and cents to study the postural needs of their employees, and to provide for them an environment suited to their needs."<sup>1</sup>

Nothing is more fascinating than the ingenious methods which have been employed to improve the still too common workplace which is badly lighted, with benches or machines either too high or too low, and, if seats are supplied at all, they consist of kitchen chairs or round top stools in varying stages of dilapidation.

### Foot Rests a Problem

The problem of proper foot rests has resulted in interesting experiments. Figure 2 shows an excellent foot rest which can be adjusted at an angle and also at a height to suit the individual worker. The end fittings are made of cast iron and the foot rest itself is made of wood. This wooden part is attached to the metal ends by the use of wood screws and a flange on the bottom edge of the swinging hanger. In Figure 3, the brace interferes with the ordinary type of good foot rest and also with knee space. The narrow bar which

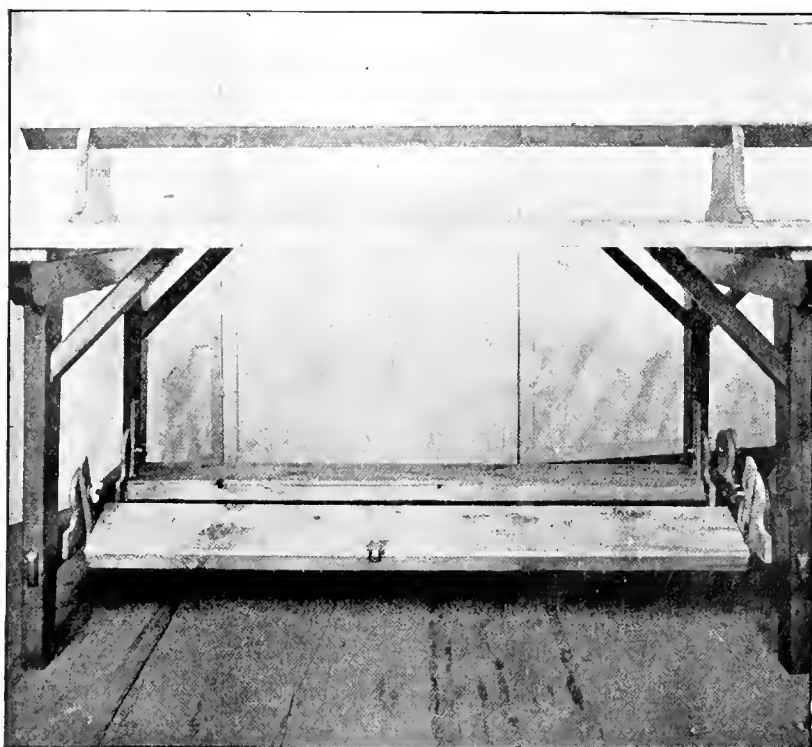


Fig. 2. An excellent type of foot rest, which can be adjusted as to height and angle to suit the individual worker.

\*The third of a series of articles on the relation of posture to industrial health compiled from the data contained in the reports of the Bureau of Women in Industry of the New York Industrial Commission on Industrial Posture and Seating. The illustrations used are from those furnished this Bureau for their report.

1. Mosher, Eliza M.: *Relation of Posture to Health*, American Posture League, New York, 1917, p. 5.

is used here, and which can be adjusted in height, is bad, but there is no reason why a broad flat foot rest could not be used with such a bar as a foundation. The seat in this instance should be lower so that the knees need not be so crowded.



Fig. 3. Here the brace interferes with the ordinary type of good foot rest and also with knee space.

The question of pedal work has aroused much discussion and has proved so fatiguing in many instances, that women are discouraged from certain types of pedal work. A large manufacturing concern writes that "the old, round stools with saucer shape seats cannot be too strongly condemned. We have known of cases of semi-paralysis of the leg muscles due entirely to sitting on such stools and operating foot treadles in connection with machine operations."

Where much pressure is necessary, seating arrangements should be planned with particular care in order to eliminate as much strain as possible. The seat in Figure 4, while better than no seat at all, is too small to be satisfactory and is of a shape which cannot give the needed support. It is also stationery, whereas it would be greatly improved if the distance from the presser could be adjusted to suit the individual worker. Figure 5 shows a new type of foot pedal where a forward and backward knee movement replaces the old type where ankle action and a certain amount of pressure were required. The operation of this foot pedal is very restful. There is no up and down movement as the whole pedal swings backward and forward with a slight push of the foot. The backward and forward excursion of the pedal is approximately

six inches; the pedal is based on a table or machine which is almost thirty inches from the floor. The main pivot point of the pedal is approximately three inches above the chair upon which the operator sits, and this is the base measurement from which all other measurements are obtained. The height of the pedal from the floor is adjustable by raising it to a higher hole in the two parallel arms which support it. A cleat of wood running across the pedal serves to brace the heel so that no effort is required to keep the foot in place. The tilt of the front end of the pedal is adjustable, so that the angle can be suited to the operator. The picture shows the left pedal tilted up and the right pedal flat. This foot pedal may be applied to any machine or table where a vertical, horizontal or angular movement is required. Any desired movement may be obtained from one to eight inches in any direction. The movement desired to perform an operation is obtained by a suitable foot rest horizontal to floor, a pair of parallel arms at right angles to floor and such levers or arms as may be best to give desired results. This picture shows a stem machine used in making electric light bulbs. Two separate pedal operations are required, and the two pedals shown can be operated independently of each other. In machines requiring only

one pedal operation, one pedal is used and is placed in the center so that the operator can work it with first one foot and then with the other.

Figures 6, 7, 8a and 8b, 10, and 12 illustrate experiments for ironers. A man or woman who operates an ironer or does hand pressing, is commonly supposed to stand, while at work. The result is that such workers have constant trouble with their feet and are often exhausted at the end of the day. There is no reason why arrangements can not be made whereby they can be seated for part of the time, and do better work as a result of this chance to vary their position.

Figures 10 and 12 illustrate machines advertised as particularly desirable, because the operators can be seated at work. Figure 6 is a simple arrangement for pressers by the use of good chair adjusted to the pressing board.

Figure 7 shows a unique presser's bench used for light work on children's garments. The operator stands between the movable ironing board and seat. The seat is stationery and tilted forward. When seated, the operator does not lean against seat, but sits on it with the ironing board pulled toward her. Her feet rest on the floor. For a short operator, a foot rest should be provided. The height of the ironing board from the



Fig. 4. An unsatisfactory seat, requiring that distance from presser be adjusted to suit the individual worker.

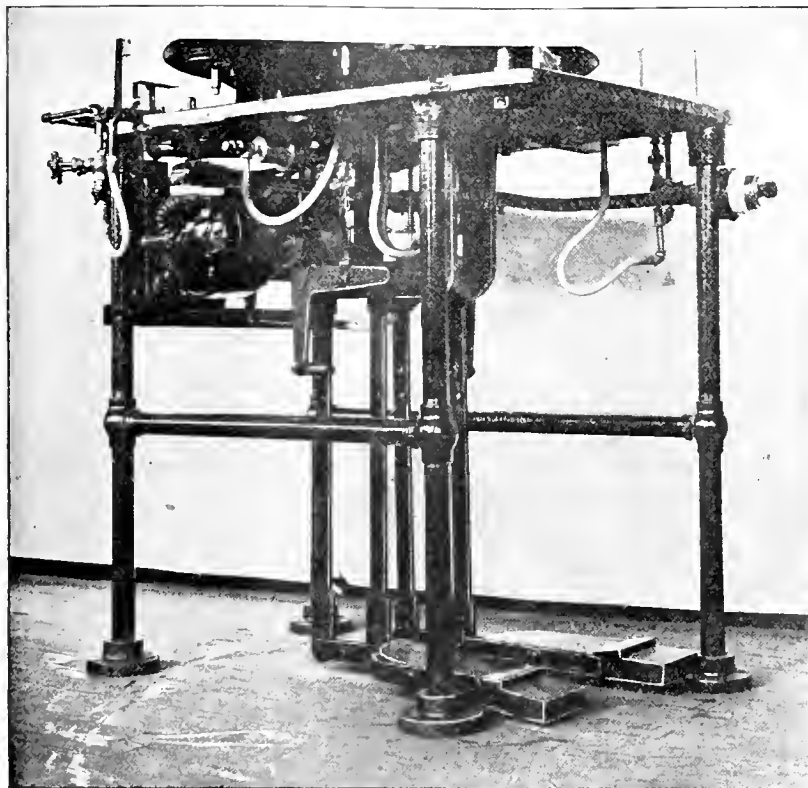


Fig. 5. Shows a new type of foot pedal where a forward and backward knee movement replaces the old type where ankle action and a certain amount of pressure were required.

floor is  $31\frac{3}{4}$  inches; the front edge of the seat is  $28\frac{3}{4}$  inches from floor; the back edge of the seat is  $30\frac{1}{2}$  inches from floor; and the width of the seat is  $8\frac{3}{4}$  inches. The ironing board is one and one-half inches thick and has a piece of wood nailed to either end under side so that it slides along as if on a track or can be pushed off to let operator in or out.

Sliding seats have developed in some instances in connection with work where the operator had to stand and move from one end of the machine to the other, or where several machines were tended by the same person. Figures 8a and 8b illustrate a type of sliding seat used for a girl operating a collar ironer. The foot rest, although a bad shape, is adjustable in height, and the supply box is at a good height and angle. The track is 36 inches long. The seat and track swing out of the way so that the girl can stand when she wishes. (Figure 8a.)

On page 340 of the June issue of *THE NATION'S HEALTH* is shown another type of sliding seat used for a girl operating two collar ironers. Here the operator reaches down in the supply box at the right to get collars and feeds them into the first ironer. By pushing on the foot rest with her feet she slides the chair to the second ironer. When this is filled,

she gives a vigorous push with her feet and also with her hand on the edge of the ironer, and in this way is again in the starting position. This long slide back makes the operation a quick one, but pushing at this angle with the support of an arm rest to steady the box may be a bad strain on the operator. The wheels are ball bearing and the chair moves very easily. Note the low, bad position of the supply box at the extreme right. The track is supported at both ends and in the middle by uprights of lead pipe. Through holes in the top of these pipes other pieces of pipe fit at right angles and are fastened in place by pins. The track is fastened to these horizontal pieces of pipe and both track and horizontal pipe supports can be slid back out of the way when the operator wishes to work standing.

Figure 14 shows still another type of sliding seat designed so that workers can tend four automatic machines placed one foot apart. The track is composed of two rails: inner one convex, outer flat,  $16\frac{1}{2}$  inches apart. The chair is fastened on a 21-inch square metal platform, the center of which has been removed to lessen weight. Ball-bearing wheels are attached to under surface of platform. Two treadles are attached to each machine, one to start the machine, one to release work. By pressing the

foot against "release" treadle, the operator receives the impetus to move chair along track. The total length of the track allowed each operator is 145 inches.

There is a difference of opinion as to the wisdom of encouraging the use of sliding seats on tracks by women because of the necessity for a constant pushing motion. Such seats should be most carefully constructed to give steady support to the worker's body.

Figure 11 shows a unique type of seat which swings rather than slides. It is used in Sheffield, England, in front of a tilt hammer. The height of the seat from the floor can be adjusted by the hook in the loops of the chair.

### Posture Being Studied

Companies manufacturing machinery and installing it are more and more taking into account the posture of the worker. A large firm writes: "We have installed quantities of machinery, not only in the canning industry, but in other factories and we have at all times been very careful to take into consideration the height at which it is most comfortable for the operator efficiently to perform his or her duties and we find that a distance of approximately 30 to 32 inches from the floor to the top of the table is usually the one most desired."

Figure 13 illustrates a highly ad-



Fig. 6. A high chair which enables the worker to sit or stand at work greatly reduces the fatigue.

justable type of seat built with a tobacco stripping machine. The seat is adjustable in three respects: the distance from the machine, by means of a hollow tube that slides over the rod at A; position of the back which may be folded over the seat at B; height of seat, C. The chair folds up at three points so that it may be put out of the sweeper's way. When folded, the chair prevents the treadle moving. In one factory where this machine was used a larger wooden seat had been placed over the original one. The chair is heavily built and wears well. In a factory where it had been used for a number of years it was still not in the least loose or wobbly, in spite of the many adjustable features.

Figure 9 illustrates an experimental first-step in working out a good seat. At this process, work must be done leaning forward and the ordinary kitchen chair supplied in the plant proved to give no back support. Straight boards were nailed to the chairs in an attempt to secure this needed support, and the company are trying by different experiments to work out the best type of seat for this particular process.

In the summer of 1920, 103 of the largest firms in the New York State reported to the Bureau of Women in Industry on their seating arrangements.

Fifty-nine of the firms were using "ordinary chairs with backs," throughout their factories. Stools, apparently without backs, were still in use in some twenty-five of the plants.

These reports were significant in that the necessity for varied posture had apparently received much more attention than the necessity for a properly constructed seat. In fourteen cases it was specifically mentioned that supplies were purposely regulated in such a way as to make it necessary for those who were seated

at work to rise and change their positions in order to remove the finished goods and secure new materials.

It was also interesting that eleven times the firms reported that "since the work is piece work, the operators can rest and change their positions whenever they wish"; that they *can* when on piece-work is true; but whether they *do* is quite another

story. Fifteen of the firms reported a regular system of rest periods, in one case for the "office workers only." In five cases the rests were "automatic," due to the nature of the process.

It is surprising that among these firms only five instances were found where seats were adjustable in any way. Eleven other firms were using seats built in different heights, but foot rests had been considered by only four of the 103 plants.

As has been suggested, the incentive for considering what good posture is and how to provide for it may have come from industrial engineers, or from a humanitarian interest on the part of the management, or it may have come from the workers themselves through unions or representatives of employees' organizations or through individual workmen. An interesting case is that of a hosiery mill where the workers in one department formally submitted a request that chairs be used in place of stools. They



Fig. 7. Without adjustment of workplace to worker, the monotonous process of ironing becomes unduly fatiguing. A unique presser's bench for light work.



Fig. 8a. This seat swings back out of the way when the operator desires to stand.

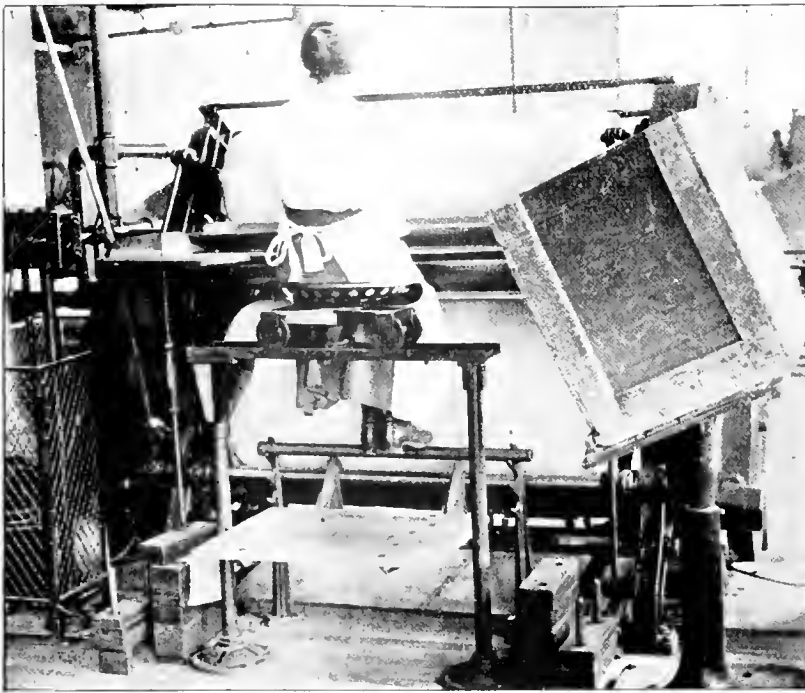


Fig. 8b. A type of sliding seat designed for a girl operating a collar ironer.

gave three reasons for making this request:

"We can do better work.

"We can increase our production.

"We can go home at the end of the day without pains in our backs and the possibility of being absent the next morning from work because of a headache from the constant strain of leaning over our machine all day with no chance of relaxation."

While many times workmen have suggested improvements, on the other hand, it is often very difficult to persuade them, particularly if they are on piece-work, to try a position which means a change from the accustomed way in which speed has been attained. Motion study experts have found great difficulty in persuading workers to accept changes in motions or in the designs of work benches, or in persuading old-time workers to sit at an operation that has been carried on for years in a standing position. The practice of teaching apprentices in regular vestibule schools has done much to overcome this difficulty. The apprentice can then become accustomed to performing an operation either sitting or standing, and has a chance to learn what a good seat is and how to use it correctly.

#### An Economic Motive

The economic motive has prompted most industrial engineers to plan for postural needs, because of their desire to increase production. The figures of "before and after" condi-

tions tell a long story and would indicate that careful consideration to the so-called fatigue "trifles" in industry may make these trifles milestones in production possibilities.

Letters came to the New York State Industrial Commission during their study of Industrial Posture from firms all over the country, and the statements of these firms, containing both good and bad points, are extremely significant in furnishing us with definite information as to what experiments are actually being made. The following are examples:

Firm No. 1—Paper Goods—writes:

There are two or three outstanding features which we feel are very important in the construction of a chair for factory purposes. First, the usual chair has too deep a seat from front to back so that the workers do not sit back far enough on the chair to receive the benefit of the back. You will note from our chair that this dimension has been decreased to thirteen inches. You will also note that there is a downward slant toward the back of three-fourths of an inch between the back of the chair and front of the chair which gives a quite natural tendency to cause the workers to use the back which is the prime object in view.

The back is adjustable both in and out, and up and down, and the chair itself is adjustable up and down to accommodate the different workers to a standard height table.

The feet are taken care of by an adjustable foot rest.

It is possible to adapt our chairs to a multitude of uses by having legs of different lengths made up. We are using some with shortened legs made up. We are using some with shortened legs, on sewing machines, and some with very much longer than regular legs for high machinery, and also for use at standing benches, particularly in our drafting room.

Firm No. 2, manufacturers of electrical supplies, make this report:

We are intensely interested and have been for some time on this question of proper chairs for industrial workers and we are trying hard to find a type best suited for our workers.

We have worked out very satisfactory foot rests of the adjustable type and a very efficient foot pedal which has eliminated all fatigue resulting from the use of our old type where the ankle had to do the work.

From firm No. 3, makers of paper boxes, comes this comment:



Fig. 9 This represents an experimental first step in working out a good seat for a process which requires the worker to lean forward.



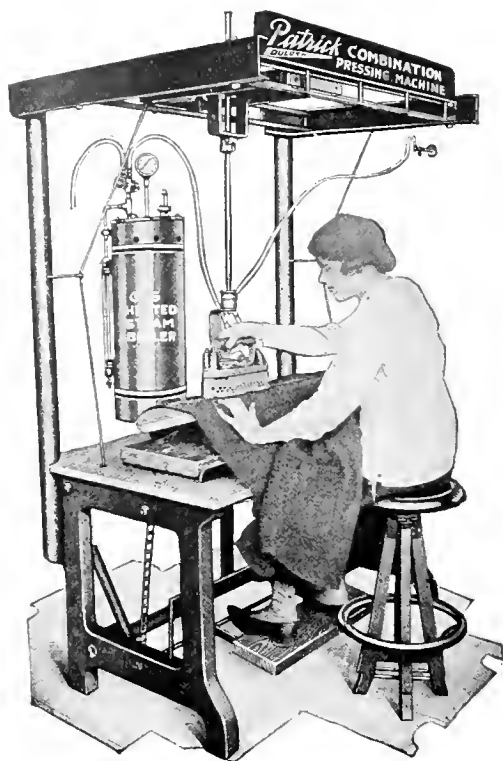


Fig. 10. A type of machine designed with especial consideration for the worker.

We have made a number of different kinds of stools with the idea of making our workers as comfortable at their work as possible, and have found the main consideration to be a height suiting the particular operation, a back which need not be used at all times, but can be used in case of slight fatigue, and a foot rest made adjustable so as to suit the operator . . . we have made some of these stools in our carpenter shop. . . .

The following account is given by firm No. 4, makers of clothing:

Some of the points we have considered in selecting seats are the following: (1) A broad seat capable of holding a person of any size. (2) Seat should be slightly concave. (3) The slope of the seat. (4) A sloping back slightly curved and not too straight. Straightness of the back, by the way, may vary with the nature of the operation. (5) Chair should have one or two rungs at the front and sides on which to catch the heels. (6) Strength of chairs. (7) Price.

We have also found that a round top chair is impossible, because of the active discomfort it occasions the operator. Further, that stools without backs are not to be considered.

Firm No. 5—camera supplies—has made the following deductions:

The essentials of proper seating, in our judgment, are as follows:

(1) That chairs be adjustable to the height of the employee and adjustment provision be made for tilting the chair seat at an angle to conform with the class of work done.

(2) That the chair seat be form fitting similar to the very familiar mowing machine seat, although not as much so.

(3) Chairs should be provided with adjustable back rests which will support the operator in the hollow of the back and which are form fitting so that they support the operator against side movement. In other words, they should be curved out so that they will go around the operator's body a little on either side. Then, too, these back rests should not be rigid but should be provided with springs so that they will be flexible and yet exert a helpful moderate pressure against the operator's body.

Of course, operators should be so seated when at work table that their arms are practically horizontal. In one of our departments we provided

stools similar to counter stools used in dry goods stores, these being rigidly fastened to the floor and provided with a spring which threw the chair up close to the machine when not operated by the operator. This was in one of our dark rooms where it was very important to keep the aisles clear in case of fire drill or any emergency. In our judgment, however, these were not as good as the chairs mentioned above.

Most of these attempts are obviously compromises between what has been and what might be. There are no absolute standards. The best we can do is to follow a few fundamental principles of good posture and refuse to accept, with no regard for physical needs, what custom has

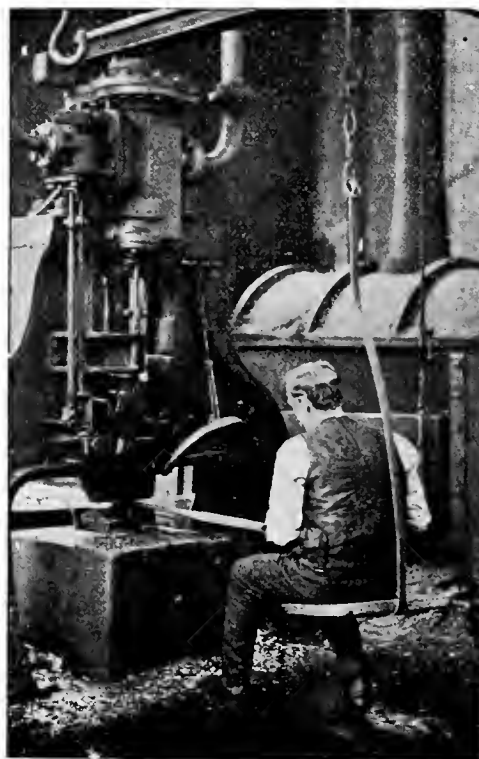


Fig. 11. A unique type of seat which swings rather than slides. It is used in Sheffield, England, in front of a tilt hammer.

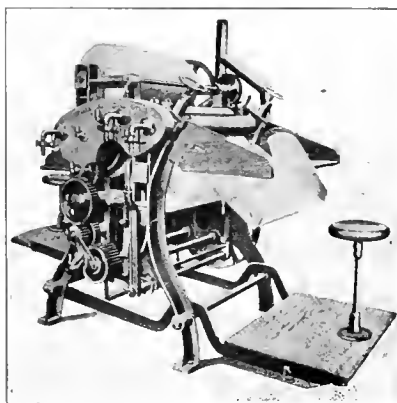


Fig. 12. A collar and cuff ironer so designed that the worker can sit or stand.

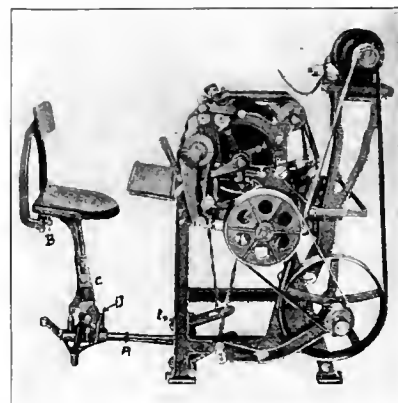


Fig. 13. A machine constructed with the seat attached.



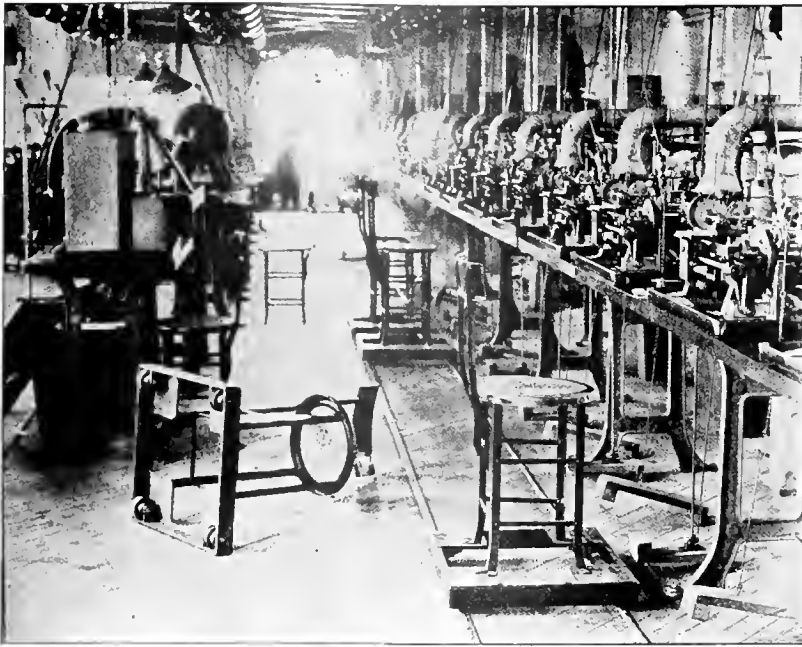


Fig. 14. Sliding seat designed so that workers can tend four automatic machines placed one foot apart.

chanced to give us. Must a worker always endure a bench constructed too high or too low? Must a clerk always use the conventionally bad desk chair? Must a housewife always accept the plumber's insistence that the kitchen sink and washtubs be built at a back-breaking height?

To take some slight step in the

right direction is usually so simple that it seems foolish to suggest it, but some step, however simple, is that much better than no step at all and eventually we may be able to have chair companies manufacture "a seat that never wears the worker out" rather than "a seat that never wears out."

## Accidents in the United States

BY MYRA HULST, AMERICAN RED CROSS, WASHINGTON, D. C.

**A**CCIDENTS killed more people in the United States during 1918 than the much dreaded disease, cancer. The toll of accident deaths was more than 83,000 in the one year, 1918. The control of accident fatalities and disabilities is one of the outstanding problems in the movement for longer and healthier lives in America.

The accompanying table reveals the extent of the accident deaths by cause in the United States.

Automobile deaths have increased tenfold during the past decade. Ninety people out of each million were killed by automobiles in 1918 as compared with ten per million from 1906-1910. While the safety movement in America has succeeded in reducing railroad and street car accidents to a considerable extent, automobile accidents have been allowed to increase at this appalling rate.

Life saving in which the Red Cross has had a very prominent part in the

past seven years has helped to materially lessen drowning accidents. If the drowning death rate of 1906-1910 had prevailed in 1918, there would have been 2,100 more deaths than actually occurred.

Accident deaths constituted 4.6 per cent of the deaths from all causes in the United States in 1918.

### DISTRIBUTION OF ACCIDENT DEATHS IN THE UNITED STATES, 1918

Based on Data from Mortality Statistics, Bureau of Census.

Cause of Accident	Number	Per cent
Total accident deaths....	83,852	100.0
Poison .....	2,787	3.3
Conflagration .....	1,799	2.1
Burns .....	8,418	10.0
Absorption of deleterious gases .....	4,247	5.1
Drowning .....	6,952	8.3
Firearms .....	2,561	3.1
Falls .....	13,070	15.6
Mining and quarrying....	3,293	3.9
Machinery .....	3,002	3.6
Railroad and street car....	13,762	16.4
Automobile .....	9,445	11.3
Other vehicles .....	2,797	3.3
Other accidents .....	11,719	14.0

### Camp for Vocational Trainees

Announcement is made from the main office in Chicago of the Wisconsin-Illinois-Michigan District of the Federal Board for Vocational Education of a summer vacation camp to be held at Fort Sheridan, Ill., June 15 to September 15, 1921, to which are invited all men now in training under the Federal Board for Vocational Education. It is believed that a great many men who could and should receive assistance from the Chicago office are not doing so because they have not been apprised of its possibilities as pertaining to their individual cases.

It is intended that the summer camp shall provide a real vacation for the boys in training, many of whom would otherwise be deprived of one. Information is available on application to Charles W. Sylvester, district vocational officer, Federal Board for Vocational Education, Chicago.

### Child Hygiene Association Meeting

The Twelfth Annual Meeting of the American Child Hygiene Association will be held in New Haven, Conn., November 2-5, 1921.

### Diphtheria Death Rate in Michigan

Michigan had the highest death rate from diphtheria of any state in the Union in 1918, a rate twice as high as the average for the United States, according to the *Health Bulletin* of the Michigan Department of Health of May 23, 1921. The average rate in the southern portion in 1920 was 26.8 per 100,000; in central Michigan, 19.8; northern Michigan, 18; and for the Upper Peninsula, 10.5. The average death rate for the state increased from 21 per 100,000 living persons in 1919 to 24.1 in 1920.

### Census of Chicago Boys

A survey made by the Boy's Club by the Chicago Council of Social Agencies at the request of the Chicago Rotary Club reports that about one-sixth of the boys of the city are reached by agencies of any sort dealing with the supervision of the leisure occupation of boys. In the South Side district there were from nine to ten thousand boys between ten and twenty years of age. Of these, about 737 were reached. Records of the Juvenile Courts show that in districts where boy's clubs work has been organized with adequate equipment, delinquency has been greatly decreased.

## Chicago's Health Department

OF ALL the cities in the world, Chicago possesses a unique history in its remarkable evolution in the short space of ninety years from a trading fort to one of the world's greatest cities, and from a swamp to the world's healthiest large city. The achievement of this health record has been achieved by persistent effort—has set a standard which affords an incentive to hundreds of other towns and cities in many parts of the world.

The site of Chicago, in 1673, possessed no indication of metropolitan destiny. A small river offered to the canoes of the Indians and French explorers a convenient harbor and access by a short portage to the larger waters of the Illinois and Mississippi Rivers. The important fact is that there was established at that time a life stream of transportation extending from Montreal to New Orleans, down which there proceeded uninterruptedly continuous travel of the most adventurous spirits of the age. Chicago was then, as now, the center of transportation routes in America.

In the consideration of Chicago's health evolution, it is interesting to record that the first case of sickness was that of Father Marquette who, on December 4, 1674, was obliged to spend a winter on the Chicago River on account of a severe illness. For more than a hundred years, Chicago's importance was measured only by the convenience it afforded for general trading between the whites and the Indians. The Indians, by treaty in 1795, ceded the first six-mile square tract at the mouth of the Chicago River.

### Early Housing Problems

The establishment of Fort Dearborn in 1804 brought a measure of stability which resulted in the gradual centering of settlers near the Fort and within easy traveling distance of it in the surrounding country. Nevertheless, the young village offered no allurements according to the report of Major Long, who in passing through Chicago in 1823 and making his first report on housing conditions says: "The village presents no pleasing prospects. It contains but few huts. Their log and bark houses are low, filthy, and disgusting, displaying not the least bit of comfort."

In 1820, the town of Chicago was surveyed and a definite attempt was made to organize its citizens into a

semblance of civic strength. The health conditions were bad. Malarial fevers, cholera, smallpox, and typhoid fever vied with one another in making the lives of the inhabitants miserable and precarious.

In 1835, a board of health consisting of seven members was established. The first cemeteries were set apart, and the first sanitary engineer, Anson

town contained 398 dwellings and was served by three drug stores.

Prior to 1838, the water supply was from wells and by water cart distribution of lake water. This water supply was full of impurities owing to faulty soil conditions, and the mortality from cholera and scarlet fever was very high. It was not until 1840 that the Chicago Hydraulic



The liberation of a people, otherwise city-bound, is effected by means of numerous and conveniently placed parks and playgrounds

Sweet, who was bold enough to construct a plank sewer on Dearborn Street from Lake Street to the river, was severely censured for his reckless expenditure of public money.

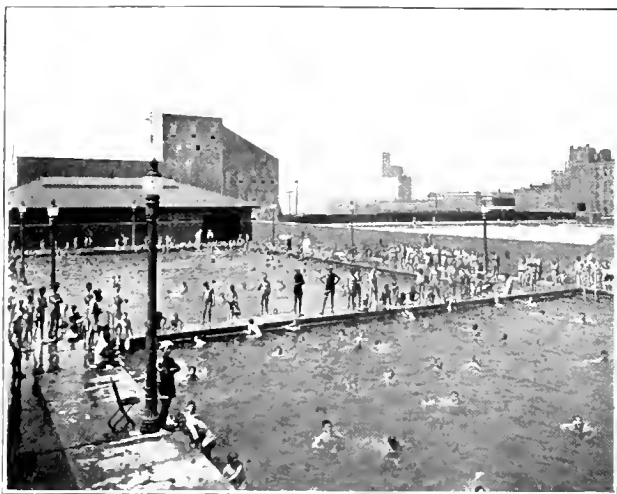
In 1837, Chicago graduated by incorporation to the dignity of a city, and the first Code of Ordinances was the first book published in Chicago, fourteen paragraphs being devoted to health matters. At this time the population of Chicago was 4,170, the

Company began to distribute water through bored logs, laid underground. The supply of water was derived from the lake by means of an iron pipe, extending one hundred and fifty feet. A twenty-five horse-power steam engine pumped the water into a reservoir located on the corner of Lake Street and Michigan Avenue.

The chief trouble with the growing city was the low ground on which it was located, and the fight for public



One of Chicago's small parks, which invites life in the open during the whole season



This swimming pool is in one of the smaller parks and provides a healthful sport in the heart of a factory district



Chicago's North Side is served by several beaches. This view of Clarendon Beach represents a typical scene.

health was a losing one, made additionally difficult by the rapid increase of population consequent upon the opening of navigation on the Illinois and Michigan drainage canal, and the operation of the first railroad, in 1848, and the arrival of the Michigan Southern and Michigan Central railroads in 1852.

Some conception of the insanitary condition of Chicago at that time may be gained by a statement of sanitary affairs in 1850. This announced the reappearance of cholera in July of that year. From July 18th to August 31st, 416 people succumbed to the disease. Sewerage system was primitive, and in many streets there were only gutters, serving as drains. In the business sections the sewers were made of heavy oak planks, triangular in shape and placed in the center of the street. The streets were planked; the gutters often clogged, leaving pools of foul liquid in the street, resulting in an intolerable condition for a city which boasted a population of 28,269 people.

In 1860, sanitation received a severe setback by the abolition of the Board of Health and the discontinuance of the offices of health officer and city physician on account of existing financial depression, and the absence of any alarming conditions. As usual, citizens forgot that, if vigilance is not constantly exercised, alarming conditions are bound to ensue. During the Civil War, insanitary conditions increased, and the location of Camp Douglas at Chicago, where 30,000 soldiers were mustered into service, was an additional menace to the city's health. In 1864, the mortality from smallpox was fearful. An attempt to focus the minds of the citizens in health matters was made

by means of a sanitary exhibition which was held in the fall of 1863. Where men fail to do their duty, the remedy is often taken out of their hands, and the Chicago fire of October 8 and 9, 1871, may be regarded as a much needed, though drastic remedy, destroying 18,000 buildings and rendering 93,000 persons homeless.

The recurrence of cholera in 1873 and 1874 lead to the establishment of the Department of Health, and Chicago engaged in a careful study of its sanitary needs, smallpox being the chief factor of menace for a number of years.

Chicago began to build itself anew and raised the level of the city from 8 to 14 feet, making it possible to install an effective sewer system along approved lines.

#### Engineering Efforts Effectual

The year of the World's Fair stimulated investigation of all buildings throughout the city. The work on the new drainage canal had commenced, and in 1900 it was opened to the immediate advantage of the citizens of Chicago, by effective removal of sewage, and the cleaning up of the lake front.

Since that time Chicago's advance along sanitary lines has been constant and extensive, and is now known as the healthiest large city in the world.

Chicago now possesses a great system of public parks and playgrounds, boulevards, bathing beaches, and forest preserves, unequalled in area, number, variety, and charm anywhere in the world. There are 207 large and small parks, forty-five of which contain well equipped playgrounds, seventy special municipal playgrounds, twelve public bathing beaches and a number of swimming pools and nata-

toriums. More than forty thousand people take advantage of these breathing spots annually. The city is surrounded by a wonderful band of forest preserves exceeding 17,000 acres in extent, all of them easily accessible by street car, electric, or suburban train.

Chicago's present water supply stations can distribute 240 gallons of water daily to every resident in the city, and this amount can be raised to three hundred gallons daily in case of emergency.

The chief factors in the health conservation of Chicago are the purity of its water supply, its abundance of distribution and use, its unique drainage system, and the many opportunities for outdoor sports and recreation provided by its parks and playgrounds, forest preserves, and bathing beaches. All these activities for public good are actively reinforced by the cooperating leadership of well organized Departments of Health and Sanitation, and a fully aroused sense of civic responsibility.

#### National Tuberculosis Association Meets

The annual meeting of the National Tuberculosis Association was held at the Waldorf Astoria in New York, June 14, 15, 16, and 17, in conjunction with the American Sanatorium Association. A symposium was offered on the Federal provision for tuberculous ex-service men, at which Dr. Haven Emerson and others read papers. The sociological section covered the question of nutrition and the school as a means of approach. A section was devoted to industrial nursing. It was emphasized anew that an adequate tuberculosis service involves a complete public health program.

# THE NATION'S HEALTH

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## Leadership of the American Medical Association

THE choice of Dr. George E. de Schweinitz, professor of ophthalmology of the University of Pennsylvania, as president-elect of the American Medical Association places the leadership in the hands of a man whose scientific achievements have long been a stimulus to his profession, and whose specialty has received constant emphasis, both through his contributions to scientific literature and through his social affiliations, in its relations to public health and general welfare. His contributions on subjects which bring out the need of special measures for the semi-sighted are quite as significant as his numerous monographs on ophthalmologic and neurological subjects. Under his leadership the broader phases of medical service as well as scientific research should receive a new stimulus.

## Industrial Physicians and Surgeons Meet in Boston

THE annual conference of the American Association of Industrial Physicians and Surgeons held in Boston marked a new advance. The attendance was the best in the experience of the organization. The program crowded five sessions full of interesting contributions and discussions.

The prevailing note in the convention was the development of preventive medicine in industry

and the promotion of industrial health knowledge among employers and managers. The necessity of proving the value of expenditures for health in industry was deemed of the utmost importance in these times of retrenchment. A note of optimism was prevalent.

The testimony of industrial managers confirmed the optimism. Some of the leaders of business in New England appearing on the program of the dinner given by the Associated Industries of Massachusetts strongly emphasized the permanence of the programs for health in industry. Such approval is nothing less than remarkable in a time when expenditures are being closely pruned. That this new overhead charge which has come into the budget in the last few years should be retained by the leading industries is the best evidence of the importance of health work to modern industry.

## New Emphasis on Social Phases of Medicine

ONE of the outstanding features of the Seventy-Second Annual Convention of the American Medical Association, held in Boston in June, was the interest displayed by the officers of the Association, and by visiting physicians, in the social phases of medicine.

Among the prominent exhibits displayed at Mechanics Hall, the headquarters of the Convention, were many of an educational and social character. Such, for instance, was the exhibit of the American Social Hygiene Association, showing panels on social hygiene and preventive medicine, the exhibit of the American Red Cross showing posters and first aid supplies, of the American Library Association demonstrating books used for hospital patients, and of the United States Public Health Service showing educational posters on venereal diseases.

Of great interest were two exhibits, one on community health and tuberculosis, which consisted of a survey at Framingham, Mass. The survey was conducted in a scientific manner and concerned itself both with the medical and social phases of health problems. The exhibit demonstrated that there is no special need of surveying large centers in order to reach certain scientific conclusions; that a survey in a small community often will elicit as much data, if not more, than one conducted in a metropolis. The usefulness of a survey in a small town was also demonstrated recently by the work done in Cleveland. The latter survey has thrown light on many medical and social problems and can be applied advantageously to communal work in large centers.

The second educational exhibit of extraordinary interest was that shown by the Association for the Prevention and Relief of Heart Disease. This Association, which has only been incorporated in the latter part of 1915, has already won its place in the history of medical effort in this country. The Association concerns itself with the prevention of heart disease among children and with the alleviation of the suffering of cardiacs, both among children and adults. The Association has made a survey of children with heart disease in New York. It has opened cardiac clinics, has revised measures for the teaching of children with heart disease; it has opened convalescent homes for cardiac cases; it has made a study of special occupations suitable for this type of patients, and, above all, has done a great deal of educational work, bringing home to the people the importance of the study of heart disease. The literature distributed by this Society is important not only from the standpoint of scientific research, but from the standpoint of preventive medicine, as it is written in easy style so that laymen could understand the importance of the problem.

That the program of the American Medical Association for the coming year includes work along the lines of social medicine is evident by the address of the incoming president of the Association, Dr. Hubert Work. In his address, Dr. Work has called attention to the problem of social medicine in its various phases. Especially interesting are his references to medicine in rural communities, to health centers, to hospitalization, and to group practice, which go to show that with the advance of scientific medicine it has become necessary to pay more attention than has ever been given heretofore to the prevention of disease and to the application of scientific methods to the relief of disease.

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### Safeguarding the Health of Vacation Seekers

THE rush of people to the forests, mountains, and water fronts for a brief vacation in resorts and camps is a modern phenomenon. Millions leave their homes and ordered life and live for a time in the open with improvised arrangements for food, shelter, and sanitation.

The new life is entered upon with altogether too little preparation on the part of large numbers of people. They do not seem to realize the dangers which lurk in the crowded areas where community control is scarcely known. When the number of vacationists was small the danger was slight; now that they have grown to legions, new efforts for protection must be made.

The organization of summer camps with effective, if crude, sanitary arrangements, and the development of state health departments work in the scattered and remote areas are the answers to the new problems. Summer communities are transient and cannot provide for themselves in a large way. Only by the cooperative effort of groups and by using the resources of the state departments of health can reasonable standards of sanitation be maintained.

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### Local Health Enterprises Reproduce Themselves

LOCAL enterprise frequently has the effect of provoking national effort, and one of the hopeful signs of the times is the ready transmission of a new idea, however isolated it may have been originally. The Creston, Ia., community organization is an example; nutritional classes for children, another; health center organizations, another. This tendency toward extension of services makes cumulative the constructive influence of such enterprises as the Cincinnati Social Unit, the Framingham Demonstration, and the proposed child hygiene experiment.

Not the least important of the local movements which have become generalized is the thorough-going campaign for the care of cardiacs. Beginning in 1911 as a tentative measure in the form of out-patient evening clinics at Bellevue Hospital, New York City, the success of this work in saving hearts from periods of breakdown and in enabling the patients to continue as wage earners, led to the incorporation of the Association for the Prevention and Relief of Heart Disease. Its activities have extended into preventive medicine, education, and have led to the concentration of medical attention upon conditions apt to promote heart disease, such as major and minor rheumatism, the so-called rheumatic types of chorea, and other diseases likely to be followed by cardiac infections.

A recent issue of the *Lancet* (London) quotes figures from Sir George Newman's report for 1919 which show a steady rise in the number of heart defects in children as well as their occurrence in early adults and middle periods of life, representing, no doubt, cases originating in childhood. The article states that, while much scientific work is being done in England on the clinical side of heart disease, not enough attention is given to the preventive side. It analyzes the high degree of effectiveness of the Brooklyn Cardiological Society and the American Association for the Prevention and Relief of Heart Disease as American standards which should actuate in

England a national campaign against the rheumatic conditions which are the ultimate cause of so many deaths and so much inefficiency.

## Social Aspects in Treatment of the Insane

THE social aspects of the treatment of the insane, based on New York experience, constitutes the subject material of one of the Columbia University studies in political science recently completed by Jacob A. Goldberg. The primary aim of the investigation has been to bring before those who are vitally interested in the whole and baffling question of insanity—whether from the viewpoint of the physician, minister, social worker, or layman—facts which will lead to a better understanding of the various phases of the problem.

As a background upon which to picture other aspects of the question, a history of legislation in New York state as affecting the insane was developed. Three succeeding chapters have to do with the process of handling the patient (1) before coming to the psychopathic ward, (2) the patient in the state hospital, and (3) the patient after leaving the state hospital,—thus covering what the state and city are doing for the insane who come under their care.

Inasmuch as the care of the human mind is not altogether a problem for the physician alone, further analysis portrayed the activities of a privately supported social agency specializing in mental hygiene activities. Twenty-five cases handled by the National Committee for Mental Hygiene are presented, which are so selected as to give a fair conception of the problems that confront physicians and social workers in clinics specializing on the side of mental hygiene activities.

In his summation of the general efficacy of service to the insane, Dr. Goldberg finds that the failure of social agencies in given conditions runs parallel with the failure of state hospitals to effect improvement along the same lines; that here, as elsewhere in medical services, low percentages of recovery are due to the circumstance that these cases are not reached soon enough either by mental hygiene clinics or by state hospitals. Institutions would be less crowded and better chance afforded for early recovery if the time before commitment were extended and opportunities extended for observation during that period.

Instead of striving to obtain larger and still larger appropriations for additional state hospital accommodations, the report recommends, as measures to limit the ever increasing need to

maintain in comparative indolence thousands of persons who have or will become mentally ill:

(1) The study and special care, as children, of the groups from which the insane are recruited, giving them the attention which their future welfare demands.

(2) The prevention of the development of unhealthy types of mental adjustment during the adolescent period.

(3) Proceeding on the assumption that in any given community the mental hygiene facilities are not adequate, emphasis should be placed upon the mental health of the population, either through the activities of public institutions and their officers, by private agencies, or both. It should be made plain that, as at present organized, state hospitals are not prepared to meet the mental hygiene needs of a community without the active assistance and financial support of private organizations.

The newer work for mental cases will have to follow these lines in order to achieve a higher degree of success in preventing and curing insanity. "With the public aroused to a deeper interest in all that pertain to the insane, improved methods for treating mental disorders will develop apace."

WHY are you doing the work you are doing, asks a questionnaire recently sent broadcast by the National Board of the Young Women's Christian Association in an effort to determine, aside from independence and pocket money, what part a job plays in the life of the American woman. Do office hours from nine to five o'clock limit the effect of a job upon the life of a young woman? Is the choice of a job made on the promise of good wages, the advice of parents or teacher, or deliberate personal choice above all other occupations? What are the reasons for working—necessity for earning a living, the desire for self-expression, for spending money, or the wish for something to do?

The summation of replies secured from such a questionnaire should afford an index of what is the general attitude of girls toward their work and its importance in their lives.

A RESOLUTION was adopted in the section of public health and preventive medicine of the American Medical Association suggesting that medical societies consider whether or not it is advisable to expel members from the societies who wilfully fail or refuse to report contagious and communicable diseases as required by law. The resolution might better have pointed out that it is the duty of medical societies to expel members who fail or refuse to conform to reasonable laws for the protection of health. Why should there be any timidity in dealing with physicians who deliberately defy the law in matters of such vital concern?



# HEALTH IN INDUSTRY

*Official Organ of the American Association of  
Industrial Physicians and Surgeons*

*Editors for the Association*

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## Health Work in Five Industrial Plants

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IN THESE pioneer days of industrial health work, information is of value which will indicate to those interested in this field, what may be expected as to the types and character of conditions encountered, and means by which such health service may be measured. The practical importance of well kept industrial health records and statistics is their use for administering such a service effectively, and also to act as guide posts for planning future work in an intelligent manner.

While most of the large industries have well established health services, and keep records which are used for their own administrative purposes, so far very little in the way of statistics has been published which will enable comparison of their work with other plants. In this direction, the worthy efforts of the United States Public Health Service are to be commended, and it is to be hoped that an adequate appropriation will be given to them in order that this important phase of industrial health work can be pursued more extensively.

Of the comparatively few small industries which have instituted health

work in their factories, not many are keeping records which will permit comparison of their work with plants of similar size as well as to see wherein they differ qualitatively and quantitatively from the service in larger industries.

### Smaller Services Organized

The Bureau which the author directs is organizing and administering health work principally in these smaller industries. This service ranges from a complete industrial health program including all the emergency and preventive phases recognized in this field today, down to the emergency service incidental to accidents.

The analyses presented in this article principally concern the clinic service, although some consideration is given to the subject of sickness absence. No summaries of physical examinations of new and old employees, or industrial hygiene features are included.

The extent and character of the work performed in 1920 in the clinics of five of the plants located in New York City and directed by this Bureau are such as to permit com-

parison. In a group of industries so varied in character as these five, the uniformity in many of the phases of clinic service is quite striking and suggestive. The author wonders whether these figures apply to other industries, and will be interested to hear from other factories whose records make these comparisons possible. If such figures hold true, then they may serve to some degree as a basis on which to estimate and forecast industrial health service, as well as to guide in the institution of the very important preventive phases of this work.

A general description of the five plants whose analyses are presented is as follows:

(A) Felt and silk hats and millinery; average number of employees 780, 50 per cent of whom are women.

TABLE II.—AVERAGE NUMBER OF TREATMENTS PER EMPLOYEE.

Plant	Surgical	Medical	All Treatments
A	3.1	2.3	5.4
B	2.9	2.6	5.5
C	4.2	1.3	5.5
D	3.9	1.0	4.9
E	4.2	1.2	5.4

(B) Straw hats, cloth caps, and hats; average number of employees 330, 50 per cent of whom are women.

(C) Cocoa and chocolate; average number of employees 450, 15 per cent of whom are women.

(D) Rubber goods; average number of employees 275, 5 per cent of whom are women.

(E) Paints; average number of employees 225, 20 per cent of whom are women.

In this article the plants are compared only as units. In each factory, records are kept by months which compare the various departments, and

TABLE I.—NUMBER OF CLINICAL TREATMENTS.

Factory	Surgical			Medical			All Treatments		
	New	Revis.	Total	New	Revis.	Total	New	Revis.	Total
A	728	1,692	2,420	1,441	333	1,774	2,169	2,025	4,194
B	353	609	962	654	221	875	1,007	830	1,837
C	624	1,292	1,916	410	170	580	1,034	1,462	2,496
D	381	688	1,069	202	78	280	583	766	1,349
E	346	601	947	212	54	266	558	655	1,213
TOTAL	2,432	4,882	7,314	2,919	856	3,775	5,351	5,738	11,089

TABLE III.—SUMMARIES (PERCENTAGE BASIS) OF CLINICAL TREATMENTS IN 1920.

Plant	Surgical			Medical			All Treatments			New			All Treatment		
	New Per Cent	Rev. Per Cent	Total Per Cent	New Per Cent	Rev. Per Cent	Total Per Cent	New Per Cent	Rev. Per Cent	Total Per Cent	New Per Cent	Rev. Per Cent	Total Per Cent	New Per Cent	Rev. Per Cent	Total Per Cent
A	30	70	100	81	19	100	52	48	100	34	66	100	58	42	100
B	37	63	100	75	25	100	55	45	100	35	65	100	53	47	100
C	33	67	100	71	29	100	41	59	100	60	40	100	76	24	100
D	36	64	100	72	28	100	43	57	100	65	35	100	79	21	100
E	36	64	100	80	20	100	46	54	100	62	38	100	78	22	100
TOTAL	33.2	66.8	100	77.3	22.7	100	48.3	51.7	100	45.5	54.5	100	66.0	34.0	100

thus permit a definite localization of the health needs. The results of these more detailed analyses may be published at a later date.

The proportions of female employees are noted above, because in the tables which follow, when variations occur in the ratios of surgical and medical cases, they can be ascribed largely to this factor. Greater proportions of medical cases are to be found in plants employing large numbers of women. The author regrets that all of his records for 1920 did not include sex differentiation, but hopes to remedy this defect for the coming year.

The total number of treatments in the clinic rooms at these five factories was 11,089 which were required for 5,738 new cases, both surgical and medical. The details are given in Table I.

The figures appearing in Table I require close study to appreciate the relation of service in one plant to another, but in Tables II and III some of these facts are presented in ratio form. Table II shows the average number of treatments per employee, which is obtained by dividing all treatments by the yearly average number of employees.

The remarkable feature about Table II is the uniformity in the average number of all treatments. This is true despite the variation in the two factors which make up this total, i. e., the surgical and medical; and this variation applies only to Plants A and B as compared with Plants C, D, and E. Each of the factories A and B employs 50 per cent of females and this is the principal reason for the larger proportion of medical treatments.

In each of the five plants, the average number of clinic treatments per month may be estimated as approximately one for every two employees. The author has discussed this feature with other factories in New York City and reference to their records has disclosed the same averages.

In Table III the figures shown in Table I are reduced to percentages. For the surgical cases there is such a remarkable uniformity in the proportion of re-visits as compared with the first treatment that the average for the five plants is justified, and we can state that for every new surgical case two re-visits are necessary. The ratios for the medical cases are fairly constant also. The relatively small proportion of re-visits here is due to the prompt relief afforded, or, in the more serious cases to their immediate reference to the family physician for further follow-up. In the other three columns noted in Table III, Plants A and B fall into one group of consistent averages and Plants C, D, and E into another group. The differences between the two groups are due to the relatively larger proportion of females

employed in A and B, as was mentioned previously.

When a further analysis is made of the new surgical and medical cases as presented in Table IV, the same uniformity is shown to exist in the character of clinic cases seen in these five industries. This is particularly true of the surgical cases. If these figures serve as an index of industrial surgical work, then 50 per cent may be expected to be finger cases and about 70 to 75 per cent, conditions affecting the entire upper extremity.

In the medical group where variations occur they can be explained for the most part by local conditions, which being recognized permit forecasts and conclusions upon which to base preventive measures in the administration of the respective plants.

The teeth treatments are merely those incidental to caries, such as toothache, and do not include any prophylactic measures advised at the time of the physical examination of new or old employees.

In general, the number of cases in the five plants for any one of the factors noted in Table IV is in proportion to the number of employees in each plant, this rate being only modified by the relative number of females employed, for reasons noted previously.

TABLE IV.—SUMMARY OF NEW CASES, 1920.

Surgical	A		B		C		D		E		Totals	
	No.	Per Cent	No.	Per Cent	No.	Per Cent	No.	Per Cent	No.	Per Cent	No.	Per Cent
UPPER EXTREMITY												
Fingers	307	42.2	184	52.1	313	50.2	197	51.7	152	43.9	1,153	47.4
Hand	113	15.5	47	13.4	105	16.8	63	16.5	57	16.5	385	15.8
Forearm and Arm	58	8.0	29	8.2	44	7.0	25	6.6	31	9.0	187	7.7
	478	65.7	250	72.7	462	74.0	285	74.8	240	69.4	1,725	70.9
LOWER EXTREMITY												
Toe	7		9		11		8		7		42	
Foot	33		9		15		9		16		82	
Leg	22		5		20		9		11		67	
Thigh	5		1		3		0		0		9	
	67	9.2	24	6.8	49	7.9	25	6.9	34	9.8	200	8.2
HEAD												
Scalp	16		2		8		9		6		41	
Face	54		13		23		17		17		124	
Eye	50		27		38		19		29		163	
Ear	1		9		0		1		2		4	
	121	16.6	42	11.9	69	11.1	46	12.0	54	15.6	332	13.7
TRUNK												
Neck	49		21		19		8		8		105	
Chest	2		2		1		3		2		10	
Abdomen	2		0		8		6		4		20	
Back	9		4		16		7		4		40	
	62	8.5	27	7.6	44	7.0	24	6.3	18	5.2	175	7.2
TOTALS	728	100.	353	100.	627	100.	381	100.	346	100.	2,432	100.
MEDICAL												
Eye	67	4.6	19	2.9	19	4.6	6	3.	16	7.6	127	4.4
Ear	13	.9	14	2.1	3	.7	5	2.5	3	1.4	38	1.3
Teeth	35	2.4	23	3.5	9	2.2	2	1.0	11	5.1	80	2.7
Digestive	281	19.7	126	19.3	76	18.6	76	37.6	53	25.0	612	20.9
Respiratory	403	28.3	193	29.5	119	29.0	50	24.7	45	21.2	815	28.0
Circulatory	6	.4	3	.5	0	.0	1	.5	4	1.9	14	.5
Nervous	328	22.7	124	18.9	109	26.6	24	11.8	38	18.0	623	21.3
Skin	46	3.2	30	4.6	19	4.6	16	7.0	15	7.1	126	4.3
General	257	17.9	122	17.7	56	13.7	22	10.9	27	12.7	484	16.6
TOTALS	1,441	100.	654	100.	410	100.	202	100.	212	100.	2,919	100.

For current use in these five factories, each one of the factors appearing in Table IV is kept showing the various surgical and medical affections treated. This entire record is too detailed to present here, but in order to show how these different ailments occur, one surgical group is shown in Table V and one medical group in Table VI. In addition to the larger proportion of males in Plants C, D, and E, the use of more and heavier machinery accounts for the relatively large number of surgical conditions in these three factories.

These tables also show the need for uniform diagnoses. For instance, in Table V the abrasions in Plant B are too few; probably they have been entered on the records as lacerations. Again, in Table VI the influenza and grippé cases at Plant B are too few, and undoubtedly have been recorded as other respiratory affections.

In order to see whether the clinic service reflected general community health conditions, a summary of the respiratory diseases by months was made and is shown in Table VII. Beginning with the high point in January, there is a gradual decline until July is reached and then a steady increase until the end of the year. This would be considered generally as a characteristic respiratory disease curve.

When this table was made up, several discrepancies requiring investigation were apparent to the author, the most prominent being the great disproportion of cases in February be-

TABLE V.—SURGICAL AFFECTIONS OF FINGERS.

Surgical	A	B	C	D	E
PLEGSES:					
Infections	85	42	31	16	9
Incised wounds	16	36	12	6	1
Punctured wounds	27	23	—	—	—
Lacerated wounds	74	46	155	97	59
Abrasions	35	3	47	38	35
Bruises	25	10	16	19	16
Burns	6	3	8	4	4
Sprains	4	7	10	6	5
Splinters	26	11	21	10	18
Bolts	—	—	—	—	—
Dislocations	—	—	—	—	—
Fractures	—	—	—	—	—
Amputations	—	—	—	—	—
Others	9	3	—	1	—
	307	184	313	197	152

TABLE VI.—INCIDENCE OF RESPIRATORY DISEASE.

Medical	A	B	C	D	E
RESPIRATORY					
Coryza	92	46	36	10	14
Pharyngitis	119	25	27	18	10
Orchitis	47	47	4	1	1
Laryngitis	14	6	13	1	3
Tracheitis	—	—	12	—	1
Bronchitis	116	65	17	16	13
Pleurisy	2	3	1	—	—
Pneumonia	—	1	—	—	—
Arthritis	—	—	—	—	1
Sininitis	—	6	—	—	—
Influenza and Grippe	25	3	10	5	2
Tuberculosis—Lungs	—	1	—	—	—
Others	3	—	—	—	—
	408	193	119	50	45

tween Plants A and B. A ratio of two or three to one should obtain in these factories. Upon looking up the records, it was found that the clinic physician at Plant B had been very irregular and neglectful in his attendance that month and this was reflected in a decreased clinic service. He was replaced by another physician in March and at once the normal clinic service was resumed. This is cited to show how one can gauge within reasonable limits, the health service for a given plant, and investigate when it rises or falls beyond these limits.

In Table VIII an analysis is given of the accidents occurring within the

jurisdiction of these five factories.

The large number of infections in Plants A and B was due in great measure to neglected needle pricks, which occurred despite an energetic campaign to secure proper treatment of these puncture wounds. It was difficult to make these needle workers realize the danger from such apparently insignificant wounds. On the other hand, the few infections in proportion to cuts and lacerated wounds in Plants C, D, and E was due to the free bleeding and necessity for prompt treatment incidental to the nature of the injuries.

In reviewing the causes of these accidents it is found that very few are due to lack of mechanical guards but that the vast majority are the result of carelessness, inattention, poor physical condition of the worker, or some other personal factor.

Most of these accidents were of the first aid type, that is to say, the employee returned to work after the wound was treated in the clinic room. If the patient did not return to work it was reported as a Compensation case. By reference to the table it will be seen that such cases were comparatively few, and most of these came back to their occupation in a few days.

In Plants A and B records of sickness absence are kept by which the relation of this factor to other causes of absence can be determined. Another record gives the illness causing the absence with the total number of days away from work for each case. The records are not complete enough, neither do they extend over a sufficient period of time to draw very reliable conclusions therefrom as yet, but a few of the summaries are presented as matters of general information.

In Table IX the tabulations for only six of the twelve months are given as the other months are incomplete or unreliable due to the seasonal character of the industry, and also to rapid variations in the number of employees, because of the general unsettled industrial conditions toward the end of the year.

It may be noted that on the average, about 50 per cent of the absence was due to sickness. This is more than the 33 per cent reported for an eastern manufacturing company, statistics of which were published in the United States Public Health Report of September 10, 1920. But absence under two days' duration was not considered as due to sickness in that report, whereas all sickness absence is

TABLE VII.—RESPIRATORY DISEASES HANDLED DURING 1920.

Plant	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
A	78	47	45	40	30	21	13	22	22	24	30	27	408
B	33	8	33	21	9	7	6	10	5	12	21	23	193
C	33	14	7	11	5	4	5	7	11	5	7	10	119
D	17	7	3	6	1	0	0	1	3	3	2	7	60
E	6	1	2	3	4	2	0	6	4	3	5	9	45
	167	77	90	86	58	34	24	46	45	47	66	76	818

TABLE VIII.—SUMMARY OF ACCIDENTS.

Plant	Infections	Infects, Punct. or Lacerations	Abrasions	Bruises	Burns	Sprains	Splinters	Foreign Body in Eye	Dislocations	Fractures	Amputations	Hernias	Miscellaneous	Totals	Reported as Compensation Cases
A	50	148	72	14	42	23	33	19	—	—	—	—	1	402	19
B	41	114	14	8	23	15	6	18	—	—	—	—	—	239	5
C	18	290	72	37	31	16	30	13	—	2	2	5	1	517	40
D	7	138	46	36	16	17	8	5	1	1	1	2	—	276	24
E	1	97	44	35	14	9	10	1	—	—	—	2	—	213	10
	117	787	247	130	126	80	87	56	1	3	3	9	2	1,647	98

TABLE IX.—SUMMARY OF ABSENCES.

	Mar	Apr	May	June	Sept	Oct.	Mar	Apr	May	June	Sept	Oct.
Avg. No. Emp.	851	896	927	904	746	667	350	359	342	308	291	331
No. Emp. Days	21,100	21,504	20,562	20,562	16,785	15,007	8,473	8,216	7,764	7,024	6,547	7,447
Total Abs. Days from All Causes	1,053	1,214	1,412	1,436	1,319	1,027	458	515	437	323	--	410
Per Cent Total Absence	5.0	5.6	6.8	6.9	7.9	6.8	5.4	5.9	5.6	4.6	--	5.5
Avg. Days Lost per Absent Emp.	2.2	2.1	2.2	2.7	--	2.4	2.4	2.6	2.6	1.6	--	3.3
Days Lost from Sickness	815	692	762	531	391	374	341	378	310	163	127	117
Per Cent of Sickness Absence	7.9	3.2	3.6	2.5	2.4	2.5	4.0	4.4	4.4	2.3	2.0	1.6
Avg. Days Lost per Sick Emp.	2.4	2.6	3.4	3.1	3.4	3.6	2.8	3.2	3.2	1.8	3.1	3.4

TABLE X.—DURATION OF ABSENCES.

No. Days Absent	Plant A—6 months			Plant B—4 months		
	No. Empl. Absent	Total Abs. Das.	Per Cent Tot. Abs.	No. Empl. Absent	Total Abs. Das.	Per Cent Tot. Abs.
1	365	365	19.5	84	84	21.3
2	76	152		19	18	
3	79	237		14	42	
4	29	116		2	8	
5	18	90		4	20	
6	11	66	35.2	4	24	28.3
7	9	63		2	14	
8	4	32		3	24	
9	5	45		1	9	
10	4	40		--	--	
11	2	22	12.1	1	11	14.7
12	2	24		--	--	
13-18	9	133		3	49	
19-24	5	103		1	24	
24 plus	10	386		2	68	
TOTALS	628	1,874	100.	140	395	100.

included in the figures of Table IX. A very large proportion of absence due to sickness is of the one and two day type as will be seen by referring to Table X. When these differences are taken into consideration the figures in these two reports on absenteeism are very similar.

Table IX also shows less sickness absence in September and October than obtained in the earlier months. A smaller amount of actual illness accounts for some of this reduction, but another reason was the decreasing demand for workers; that is to say, employes are not inclined to stay home for trivial ailments when they know their places can be filled readily.

In order to determine the duration of absence due to illness, records were started in July, 1920, in Plants A and B, showing the length of time each individual was away, and the character of the ailments causing the absence. The latter feature has not been compiled yet, but in Table X a summary of the duration of absence is given. At Plant B, work is very slack during the summer so the tabulations there cover four months only, but these will permit ratio comparisons. The number of absentee days covers the working period only and does not include Sundays.

In Plant B a very interesting analysis was made last spring, immediately after the April figures were

compiled. It was found that whereas the general factory absence was 6 per cent, the Straw Trimming Section was 12 per cent. This section employs a female help of varying ages, the large proportion, however, being young

women. The Works Manager thought this excessive absence was due to the girls and younger women, and so it was decided to divide the absentees into age groups, with the surprising contrary result shown in Table XI. More than one-half of this absence was due to illness, the large part of which was in the women above 40 years of age, due to more serious ailments, and slower convalescence.

In conclusion, the author wishes to emphasize the practical importance of facts such as presented in this report. They are not matters merely of academic research, but to those trained to interpret such readings they provide the means to administer industrial health service intelligently

TABLE XI.—ABSENCES BY AGE GROUPS—PLANT B, APRIL, 1920.

Age Group	Days Absent	No. Empl. Absent	Avg. Days of Absence per Employee
15-19	24	11	2
20-24	9	3	3-1/2
25-29	12	5	2
30-34	15	7	5-1/2
35-39	--	--	--
40-44	18	4	3
45-49	21	2	14-1/2
50-54	3-1/2	25	5

and effectively. Furthermore, the keen, practical factory manager appreciates facts which show him the health status of the human power under his direction, and enables him to compare conditions in his own plant with those in other industries.

## Association Officers Elected

THE recent meeting of the American Association of Industrial Physicians and Surgeons in Boston was attended by a large and representative group of industrial physicians and surgeons, all of whom are actively identified with the Association and are severally responsible for much of the outstanding achievement in industrial medical service during recent years. The general participation in the discussions and the wide range of problems which occupied the attention of the assembly bespeak the influence of medicine in industry.

Officers for 1921-1922 were elected as follows: Dr. C. E. Ford, General Chemical Company, New York City, president; Dr. C. F. N. Schram, Fairbanks, Morse & Co., Beloit, Wis., vice-president; Dr. L. A. Shoudy, Carnegie Steel Company, Bethlehem, Pa., second vice-president; Dr. William Alfred Sawyer, Eastman Kodak Company, Rochester, N. Y., secretary and treasurer.

Directors as follows were elected to serve from 1921 to 1923: Dr. C. A. Lauffer, Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa.; Dr. G. H. McKinstry, Spang, Chalfant & Co., Inc., Pittsburgh; Dr. L. Noland, Tennessee Coal, Iron & Railroad Company, Birmingham Ala.; Dr. C. H. Watson, American Telephone & Telegraph Company, New York City; Dr. W. B. Fisk, International Harvester Company, Chicago; and Dr. Ralph W. Elliott, National Lamp Works, Cleveland, O.

The directors held over from the previous years are: Dr. Philip King Brown, San Francisco, Cal.; Dr. C. M. Harpster, Toledo Railway & Light Company, Toledo, O.; Dr. C. W. Hopkins, chief surgeon, Chicago & Northwestern Railway, Chicago; Dr. Harry E. Mock, Rush Medical College, Chicago; Dr. R. H. Hourigan, The Larkin Company, Buffalo, N. Y.; and Dr. J. A. Watkins, Lunkenheimer Company, Cincinnati, O.

# Industrial Sanitation Affects Public Health

By S. DANA HUBBARD, M.D., SUPERINTENDENT, DIVISION INDUSTRIAL HYGIENE, NEW YORK CITY DEPARTMENT OF HEALTH, NEW YORK CITY

IT MAY be stated that the health of a group is in a very definite degree dependent upon current sanitary practices, but, in industry, problems of sanitation become highly complex and relate quite definitely to provisions of equipment. Perhaps it might be safe to assert that in industrial establishments, no item so essential to comfort and health is so seriously neglected by employers and so abused by employees as the equipment of toilets, urinals, etc.

Toilets are regulated in New York City by law. This considers kind, number, location, ventilation, etc. The Industrial Code and the Sanitary Code specifically deal in minutiae with toilets, demanding separate toilets for each sex in every factory. Unfortunately there has been omitted responsibility for providing toilet paper and this oversight at times results in the use of heavy paper or newspaper which blocks the drains.

Proper placing of toilets is an important matter; whenever practical, toilets should be provided on each floor giving careful consideration as to the distance employees must travel from their place of work.

Much expense of upkeep and inconvenience would be eliminated if engineers and architects would select for industrial establishments a standard toilet equipment and industry should demand a standard of care for these places. For the sake of cleanliness, toilets should be constantly supervised, regularly cleaned, and occasionally disinfected and if damaged or out of order immediately repaired.

## Safety in Standardization

The washing of the toilet with a hot solution of sal soda—three gallons of hot water to one pound sal soda, or a strong acid solution, muriatic acid one-quarter strength, materially aids in removing stains, and destroying the strong urinous odors.

The urinal is a subject on which the sanitarian could spend considerable time with much comfort to the public health. Urinals quickly foul and but few seem to know how to clean and keep clean these affairs. As an interesting experiment, collect some urine in a small metal or glass dish and set it aside. In less than a day it is cloudy, turbid and odorous—the stench being exceedingly unpleasant.

This demonstrates the necessity for care of the urinal. Now clean the metal dish by emptying the contents and flushing with cold water, as is ordinarily done in cleaning urinals and it will be found that cold water will not remove the deposit nor the odor. Hence scouring is necessary properly to cleanse and keep them sanitary. A visit to an up-to-date hotel, railway station or large office establishment where care is given to these places, will reveal that the lavatories are clean, orderly and free from unpleasant odor. Further there will not be the strong aroma of cresol to disguise the urinous stench. One of these bad smells is as unpleasant as the other and neither is necessary. How is this cleaning done? It is not accomplished simply by leaving things alone and trusting to the stereotyped sign—"Please flush after using"—but these places are in charge of an attendant who is held responsible for their cleanliness.

In some establishments proprietors expect their workmen to leave the premises and use toilets provided either by public places or those accessible to the public. The law specifically requires that toilets be provided. In the sparsely settled districts, toilet accommodations are located outside of the building and at some distance from the place of work. This causes a loss of time and in the cold season endangers the health of the employee. Toilets should be located within a factory, preferably on an outside exposure in order to secure light and ventilation. It is a very safe rule to provide toilet accommodations on each floor. In some of the tall office buildings the toilets for men are on one floor and those for the women are on a different floor. All toilets should be plainly marked and the doors should be provided with bolts in order to secure privacy. It is a good feature to have distinguishing lights at night indicate the location of the toilet. Some establishments have markers in the hallways showing the location of the toilets.

The toilet should be in charge of a committee of workers—the shop sanitary committee—whose duty it should be regularly to inspect these places, and report on special cards furnished, the conditions found on each inspection. If this were done,

many of the objectionable conditions which are frequently complained about and which often are incident to improper practice by the workmen of the shop, could be quickly detected and in many instances prevented. This committee should be changed sufficiently often to give each employee of the shop an opportunity to serve and in this way become familiar with house sanitation and the necessity for such. Shortage of toilet paper and the stopping up of basins would be detected promptly and opportunity given to have such corrected before it puts the apparatus out of order. In one establishment alone this cut the expense of toilet operation 50 per cent in less than one year.

## Standards of Equipment

Architects and engineers should consult the sanitary authorities in factory construction about toilet accommodations and these authorities should endeavor to devise a good practical sanitary toilet equipment of a standard variety. Mr. Fitch, a safety engineer of note, suggests the following standard toilet equipment:

(1) Location on outside wall, for light and ventilation.

(2) Solid porcelain closets with open front type of seat (horseshoe shaped), the seat automatically flushing the tank and after use raises so as not to be wetted in case this basin is used as a urinal by men.

(3) Each closet to be enclosed in metal and furnished with automatic closing doors. The door to have an inside bolt to insure privacy.

(4) Each toilet to be at least 90 cubic feet in area.

(5) Floor to be concrete, pitched to a floor drain.

(6) Hose bibb water supply for flushing and washing. Every toilet to be washed with a disinfectant every day.

(7) One toilet for every five or multiple of five workers.

(8) Full length porcelain urinals equipped with water supply for constant flushing and separated by a full length screen to insure privacy. The urinal to be set on a slate slab with concrete border, tapered so as to form drain to waste.

This standard is sanitary, practical and efficient.

Common drinking cups are dangerous and are in violation of the law.

Individual cups should never be loaned as this practice may spread disease.

Clean, cool, wholesome and an ade-

quate supply of drinking water is necessary and essential to the health of workmen. The law requires this service because it is necessary for health.

Drinking water is necessary not only within the shops but such should be accessible to yard workers and to messengers. For these reasons there should be frequent opportunities for people to obtain a drink on our highways. There is a strange situation regarding our public drinking places. In the parks there is an abundant number of drinking fountains of the most approved type, but on our streets and avenues the reverse is the situation. Why?

In the shop the drinking water and its source should always be carefully supervised. Many instances of tank collection on the roof have shown the necessity for this supervision. Animals seeking water get drowned in these unprotected tanks and a floating carcass is not unusual to be observed by our inspectors. Sediment, especially when tanks are in the vicinity of dust producing places, collects quickly in the bottom and on the surface and either discolors or flavors the water with a disagreeable taste. The roof of a water tank is rarely ever painted or metal protected and this cover when made, being exposed to the elements, rots and the decayed debris gives to the water a distinct "woody" taste and smell. The roof tank is also a mosquito breeder when it is uncovered.

The location of the water tank is deserving of consideration as quite a number of tanks have been found located in improper places. This division is now trying to have some factories remove the water tank from water closet compartments. No doubt here, with improper ventilation the drinking water may become foul or contaminated, especially as in one instance a woman was found washing her hands in the tank after performing the functions at the toilet. It seems unbelievable that a drinking water tank would be purposely placed in such locations but where room is scarce and rents high the propriety of such is scarcely questioned by those indifferent to the health of the worker of the community.

The common drinking cup is worthy of closer consideration. Science has abundantly proved the common drinking cup to be a menace to health, yet it is observed quite often in our shops and while there is a statute prohibiting, its presence is daily observed in many establishments. It is inimical to health and should be abolished. Managements destroy the common glasses, tin cups, and old cans or jars furnished by workmen; but, unless salutary discipline and education impress the men and women, this violation will continue. The legal notice should be posted at each drinking place and all workmen should conscientiously live up to this requirement as it is necessary for health. Some of the most loathsome of the in-

fections—syphilis—have been spread through the use of the common drinking cup. *Away with it.*

The problem of the individual cup has not been solved. Either the workers should be made to provide their own cups or else individual service should be furnished by the establishment. This service has been solved in our trains, ferries and hotels, and industry would be wise to follow suit. Many workmen are not informed of the dangers of the common cup and so our industrial inspectors are kept busy explaining the reason for this necessary regulation.

A drinking fountain with an angle stream will do away with the cup problem entirely. There are many sanitary models on the market, but a good practical one may be made from the ordinary spring faucet, inverted and the lips prevented from touching by a wire guard mounted on a tripod. Several of these have been installed in our public schools and they solve the problem admirably.

Ice should never be placed in the drinking water as it is likely to be surface soiled or else have in its interior germs (typhoid) which may cause illness. Many germs are resistant to cold and therefore the law forbids ice being placed in the water.

The space about the drinking fountain is often very insanitary—wet, slippery, and dangerous. It is rather common practice to throw on the floor the water not used. This is pernicious as the wet floor in time rots, the moisture is dangerous to walk upon and the wet stained floor is unsightly. Waste receptacles should be provided and workmen should be made to use these, in the interest not only of cleanliness but of safety and health.

### Lockers and Wash Rooms

Until quite recently little or no consideration has been given to the comforts of workmen and working women in this respect. Damage to clothing and loss of garments by petty pilfering have been the source of much dissatisfaction among workers and complaints about inadequate locker space are constantly reaching us, complaints which are in many instances justifiable. Workmen should have a place to hang their clothing and hats and leave their lunch boxes where such articles will be kept clean and secure. Lockers should be fire proof, vermin proof, and placed in a location so as not to absorb odors. Locker rooms should be readily accessible. Not infrequently industrial establishments expect workers to hang



A neat, modern, up-to-date first aid room in charge of a first aid attendant assigned by one company. Every care is given to the injured or sick in a most efficient manner.





In this metal factory the worker repairs and replates electric chandeliers in a dark room with no windows, dangerous work benches, unventilated cauldron, and with aisles obstructed with litter and trash. The labor turnover in this shop was 60 per cent.

their belongings on a peg or nail near the work bench or place them in some out of the way location only to find later that the lunch has been stolen, pockets picked, or the garments taken. These little annoyances materially disturb even the most complaisant. In establishments requiring a complete change of clothing lockers are a necessity in the interests of decency and health. Conditions which make it necessary for women to change garments in places exposed to the view of the other sex are demoralizing and manifestly improper though it has been observed by our staff quite often. The careful storage of the clothing while at the shop is essential to the comfort of the workman.

Lockers should be constructed of metal, connected in units and be of the hygienic variety—on legs some distance from the floor. The door should have a key which should be in the possession of the user of the locker. The locker room should be handy so that in case of fire or panic the worker may remove property without undue loss of time. Lockers should be ventilated in order to be sanitary. They should be of sufficient size as to permit the garments to be hung comfortably without wrinkling or mussing. The rolling of garments and sticking them into pigeon holes makes the worker dissatisfied and, further, if the worker is not encouraged to be neat in dress he will not be tidy in his work. Slovenliness is one of our besetting sins. It requires education to be orderly.

Lockers should be systematically inspected and should be cleaned at least once a week. A good plan adopted by many establishments is to have the

lockers empty and on Saturdays or once a week have them scoured. If the locker service is large it warrants an individual keeper who should have entire charge and be held responsible for the cleanliness and condition of the lockers. Lockers should be free to all workmen. Where a locker fee is charged to the worker it has bred discontent has afforded the worker an excuse for disliking his job. The individual metal locker is a necessity and sooner rather than later the sanitary locker will be made to replace the peg or hook.

### Washing Facilities

Have your workmen opportunity for cleaning up? If not, why?

Surely no one should go from the workbench and eat lunch without cleaning the hands. Certain indeed no one should leave a toilet and not cleanse the hands.

The statutes under certain conditions require washing facilities—bakeries, lead workers, etc.—and in some instances the laws require the provision of hot water and soap.

In certain occupations, such as foundries, shower baths are required by statute.

Why should employers have to be forced by law to provide that which even a casual observer could quickly determine to be not only essential for the comfort of the workmen but necessary in the interest of efficiency.

It has been only recently that public attention has been centered on these conditions and, while the period is short, yet the favorable reaction has been marked, as today the washing facilities are adequate in many of our industries.

It might not be too much to require of every industrial establishment where there are a number of workmen employed to have adequate washing facilities provided. In many instances these facilities should include not only places for hand washing with hot and cold water or both, but in trades where the workman is distressingly soiled, as in coal handling, firing, oiling, etc., shower or tub baths should be provided. This is in the interest of public comfort. For, who likes to meet in public conveyances these soiled workmen who through no fault of their own, are by reason of their soiled garments a public nuisance. This is most unfortunate and must be embarrassing to the individual; but under circumstances which provide no lockers, no washing facilities, if the workman resides some distance from his work, he is forced to travel with untidy person and habili-

ments. It demeans his self-respect and is provocative of argument while in transit. A condition of this kind is unnecessary. With wages as good as they are there is no need for the individual not having two suits, provided he has a place to wash up and change his garments. We feel keenly for these individuals. Many plants have no washing facilities and oftentimes workers have to eat their lunches without being able to wash their hands, or after attending to the functions of nature cannot do so owing to the failure to provide these facilities. Should a typhoid convalescent return to work under such circumstances and be a carrier of organisms, such a procedure would be exceedingly harmful to the community. It is pleasing to be able to state that as soon as these facts are brought to the attention of industrial agencies much has been done to stop these very insanitary conditions, but much is still to be done in this direction.

An available wash basin, preferably supplied with hot and cold running water, soap and individual towels is demanded in the interest not only of bodily comfort but are actual health necessities.

### Shower or Pool Bathing

Nothing so rehabilitates self-respect as ablution.

We will not consider the subject of baths in general as volumes may be written and any one interested may learn some valuable information regarding this subject by consulting the Encyclopedia Britannica under the caption Baths. What we are concerned with is the necessity from a sanitary health point of view of the need for bathing in industrial work.

In dyeing establishments, dusty trades, or industries in which fumes constitute a problem, there should be provided shower bathing facilities. These are very helpful in the heated season, but in certain industries are essential at all periods to body comfort and health.

In large foundries and in establishments where there is considerable dirt—flour mills, foundries, plaster mills, coal passing, printing establishments, paint works, garages, and chemical plants—shower bath facilities are necessary, and in some of those mentioned are required by law. In fact it might be stated safely that every industrial plant ought to have a few shower baths connected with the locker room, the number of showers required varying according to the nature of the occupation and the number of workmen requiring such serv-

ice. If the work is dirty, and grimy, and particularly if poisons are used, workmen should shower before leaving for home, especially when they change all of their clothing upon entering or leaving the mill.

Under no circumstances should night workmen or others be permitted to use roof tanks for pool bathing. This has been detected and it not only fouls the tank but contaminates the water which may be used for drinking purposes. To prevent this, roof tank doors should be padlocked.

### Lunch Room Necessary

Where workmen are some distance from their homes when employed or where local public establishments do not afford service or the employee cannot stand this additional expense, there should be provided, places,—especially in the cold season and on wet days—where men and women may gather and eat their lunches comfortably. In some places separate quarters are provided for the sexes, though this is not always necessary. Many establishments provide lunch rooms and some even furnish the lunches. Some of our large banking establishments are finding that it is service well worth while, and in many places where night work is performed the midnight meal or lunch is prepared and served away from the work bench.

In the warm season outdoor facilities in plants having yard room should be set apart for lunch service. In one of our large mechanical plants a lunch yard has been established where music, singing and many forms of recreational activities are undertaken during the lunch period. Having witnessed the operation of this service on many occasions we can testify as to its helpfulness. In co-operation with social, religious, and public health activities there has been some splendid work of a social and educational character performed in this yard lunch service. Near one of the large barns of one of our street railways the recreational yard is of quite pretentious proportions. Workmen should be encouraged not to eat their lunch in the shop. In certain poisonous trades strict regulation forbids this practice. Health demands the change and the workman as soon as he learns of the effect of this practice on his disposition and his health soon takes up the innovation and continues it.

The division of industrial hygiene for some time has advocated suitable lunches and in order to aid the worker, prepared a free booklet,



It took two lawsuits to bring the owners of this insanitary metal workshop to improve the unhygienic conditions. The exhaust system was not operating and defective, the work was done under crowded conditions, and limited light made it dangerous.

"Keep Well No. 17," on how to prepare and serve economical, well balanced, and suitable lunches for the workingman. These may be had for the asking.

A suitable carrier became necessary when prices soared so high that eating in food establishments was practically prohibited and the workman untrained as he was did not eat that which his system demanded. This carrier has a vacuum bottle for carrying hot or cold liquids, a metal container for keeping food properly, and has ample carrying capacity for a very hearty meal. The container is fiber and is neat and indestructible. It retails at about four dollars. Since starting this agitation it is not unusual to observe many hundreds of our workers, both men and women, taking their lunch to the shop. Health demands food and to provide what is suitable and economical is indeed a problem.

The sanitation of lunch rooms is frequently neglected. After use the place is littered with all forms of trash, indicative of carelessness. Here we have endeavored to get the worker's attention and where these talks have been given the lunch room is neat and tidy and the sanitary committee quickly disciplines offenders by mock trials. This affords sport for those present and is a salutary example, preventing repetition of these offenses against decency. The lunch room should be kept "spic and span." The success of the lunch room is dependent upon intelligent co-oper-

ative effort. After all, we are only human and we have pride not only in our dress but our plant and tidiness and good sanitation are essential to efficiency and success. Cleanliness is next to Godliness, and it has been frequently observed that the better dressed and the cleaner the plant the greater aid is sanitation to happiness and splendid service. Men and women too are going to be attracted to the plant which has good and clean work places. The plant which has a high regard for sanitation is going to have a reduced labor turnover, a pleased staff, and will get an adequate return for the expense incurred.

### Mirrors Added

We have these in our homes—yes, both men and women. Why should not mirrors adorn our shop walls? This may appear to be fastidious, but to go even into a blacksmith shop and find a fragment of a mirror reposing safely in a corner near the wash basin indicates that there is a need for a reflector near every washing basin. But few individuals can part their hair without using a mirror and every possible inducement to encourage personal tidiness is a distinct aid to improved personal health and general sanitation. By all means let the men and the women have a good mirror near the wash basin in every shop.

We overhaul our machine. We look after it constantly. Why not give our bodies the same vigilant care and consideration?

If disease broke out like a fire, we could all run when the excitement started; but, unfortunately, those diseases most destructive of human life and human efficiency begin insidiously, stealing upon us like a cat upon a mouse. They are well implanted before recognized and then our medical adviser informs us it is "too late."

A medical examination is an affair of the doctor and the individual and should be as confidential as a consultation between a private paid physician and his patient. Abuse of this privilege has caused many workers to avoid the medical man and this is most unfortunate.

The division of industrial hygiene will make a confidential physical examination in private and personally advise the examined, free of charge. Many hundreds of these have been made. We also say if you do not want us to do this, see your private doctor occasionally and have him overhaul your body; or at least see the plant physician, who is ready and willing to help you in the interest of industrial efficiency. Heretofore it

has been the practice of industry to let the workman gravitate to his proper sphere of usefulness because labor was plentiful and material cheap. The war and its many changes has reversed this condition and today trained labor is scarce and material costly. Similarly, changes in the staff have been found to be uneconomical both to capital and labor.

The recent experience in the selection of men in the draft, astonished many who were unaware of the poor physical condition of our youth, but it has been appreciated for many years by experienced sanitarians that from 50 to 75 per cent of our school children suffer from some remediable physical defect and to find only 33 per cent physically unfit, in a higher group, was, on the whole, encouraging.

Many of the physical defects that impair physical effort are trivial in character but neglected soon develop into serious conditions. "For want of a nail a horse was lost." "A loose screw often is the cause of a broken door."

resorts and hotels, show that 45 per cent incident to human carelessness we are appalled. Fairly reliable statistics inform us that only 12 per cent of industrial accident cases, however, are directly attributable to machinery. The obvious is evident.

In considering the promotion of health and longevity of life heretofore officials have been concerned chiefly with preventive measures controlling disease as the chief factor in precocious shortening of life.

The importance of industrial hygiene has been only partly appreciated and many of the schemes to put this into effect have been rather imperfectly carried into execution. In many instances personally known by us it has been only half-heartedly done. This condition must be changed. To save life and reduce unnecessary sickness and accident expense this work must be carefully planned and scientifically executed, expecting that through sanitary shops our jobs will not be a menace to our workers' health and a debit against public health.

## Mobile Laboratory in Michigan

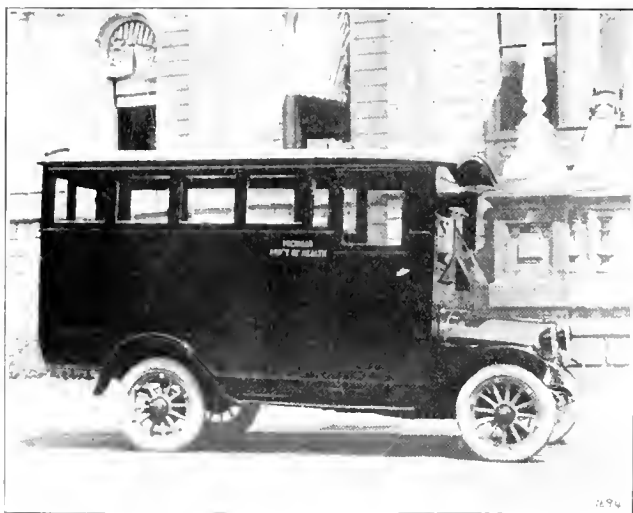
MICHIGAN'S "laboratory on wheels," instituted last summer for the purpose of inspecting sanitary conditions at re-

approximate starting point for the motorized laboratory, which will be manned by two bacteriologists and a sanitary engineer and will work

cent of the water supplies were found unsafe, that half of the resorts had no adequate method of garbage disposal, and that 47 per cent of the milk samples analyzed revealed a higher bacteriological count than is allowable for "reasonably clean" milk.

"People who go to summer resorts," says Dr. Olin, "are in need of an abundant supply of good, wholesome food—especially milk. Many are in such a physical state as to suffer serious consequences from contaminated water or food. No more effective work, therefore, can be done in protecting the public health and the reputation of the resorts, than careful supervision of water, milk, and food supplies."

"If Michigan wishes to maintain the name it has earned—the nation's summer playground"—its resorts from now on must stress sanitation. People in cities are learning the value of sanitation, and in choosing a place to spend their vacations will come to demand the same protections they are afforded in everyday life. Vacation typhoid will be a thing of the past when effective sanitation is carried to every part of the state, rural as well as urban, and one of the most interesting developments in sanitation is the mobile service."



Michigan's laboratory on wheels can be rushed to the points where disease foci exist, and thus protects the health of the vacationist. Incidentally it conserves the summer resort industry, an important economic feature.

sorts throughout the state, will be in the field this season from the time the first vacation enthusiast arrives until the last one leaves, announces Dr. R. M. Olin, state commissioner of health. Ludington, Mason County, will be the

In considering the enormous loss around the northern coast line of the Lower Peninsula.

Reports on the surveys completed during the 1920 season, when the traveling laboratory visited 131 summer

# Physical Standards for Child Laborers\*

## Surely Our Society Does Not Need to Live on the Earnings of Its Young

By S. JOSEPHINE BAKER, M.D., D.P.H., DIRECTOR OF THE BUREAU OF CHILD HYGIENE, DEPARTMENT OF HEALTH,  
NEW YORK CITY

ADEQUATE protection for the child after it enters industry has demanded that effort be largely devoted to prevention as well as to the correction of wrong conditions after they have occurred.

The National Child Labor Committee has called attention to an existing condition that is worthy of the deep consideration of all who are interested in the welfare of the child and its effect upon future generations. In *The American Child* for November, 1920, this Committee states that:

(1) There are at least five and a half million illiterates in the United States.

(2) Nearly one-fifth of all American children between the ages of ten and fifteen are out of school, earning their own living.

(3) Illinois, Iowa, Kansas, Maryland, Minnesota, New York, Pennsylvania, Texas and Wisconsin all report a startling increase in the number of children leaving school to go to work in the year 1920.

Investigations would also seem to show that only 4 per cent of the children in the elementary schools enter high school, and only about 1 per cent of all children finally enter college.

### One Child in Five Works

In the United States there are approximately eleven million children between the ages of ten and fifteen years. According to the statements just given, therefore, we have approximately 2,200,000 children at the vitally potential ages of from ten to fifteen years, engaged in some form of industrial occupation.

It would seem that the time has gone by for any argument as to the need of protecting our children against exploitation. Whatever may be our conception of a world in which social justice will be the rule for all, we must consider one fact as basic: social justice for children is essential. This is still denied because, in my opinion, people have not yet been sufficiently aroused both to the extent to which it is denied and to the importance of measures which will mean

full protection for every phase of child life and progress.

During the latter years of the war, children were apparently needed in industry to a greater extent than ever before. It is probable that many doubtful arguments were put forward as to the extent of the need of children in industrial occupations even during that period. With the ending of the war, however, such an emergency may be considered to have ceased. According to the authority quoted above, however, the tendency for children to leave school and go to work is on the increase instead of on the decline. The Committee states: "More children have left school to go to work in 1920 in many industrial centers than in 1919. Fourteen states report an increase in child labor during the first six or eight months of 1920 as compared with the same period last year. In New York City 5,283 more children applied for work permits in the first six months of 1920 than in the same period last year, but in the last three months there has been a decrease in applications, so that the total increase is only 2,353. In Baltimore County, Maryland, there were 4,064 more applications for work permits up to October 31, 1920, than in 1919, while during the summer the Chicago authorities reported an increase of 13,000 in that city, and in Minnesota there has been an increase of 193 per cent since 1915." The further statement is made: "The place for every American child up to sixteen, at least, is in school, and we have proved that by mothers' pensions, child labor scholarships, and other devices for public aid, even poor children may be kept in school. The child who goes to work at fourteen has an earning capacity at twenty-five just half as great as the child who stays in school until he is eighteen; and the child who goes to work at fourteen is twice as liable to sickness and disability as the child who stays in school. In fact, the loss to the nation in health, efficiency and happiness, created by premature employment, is incalculable. As Mr. Hoover puts it, child labor is 'poisoning the springs of the

nation at their source.'" The present time offers unequalled opportunities for the protection of the child. The war taught us the value of human life and the United States is now following the example of Europe in devising and putting into effect many forms of child welfare work. Never before has so much attention been given to the essential needs of childhood.

### Child's Needs Foremost

At the present time, industrial conditions, particularly those pertaining to employment are reverting to their pre-war status. Whatever the needs of industry for children may have been in war time, we may be sure the conditions of adult employment at present, and increasingly in the future, will make the employment of children less and less essential. It will probably be true, for the next few years at least, that where children are employed to any extent it will not be because of the need of them in industry but because they can be employed at a wage far below that for the adult worker. Such a course can only result in harmful exploitation of the child, without any benefit to a sound industrial policy. There is another point of view from which we must consider the relation of the child to industry, and that is that even when industry shows an apparent, even if dubious, need of child labor, only the minor premise of the argument is stated. The main point to be kept in mind is not *industry* and the child, but the *child* and industry.

We are not arguing with regard to the present alone when we consider our attitude towards child labor. There is a later aspect to the matter, as has already been shown; that is, the productive capacity of children who have been well prepared is greater than for those who have spent less time in school, but the immediate economic question relative to the use of child labor should not be considered as worthy of discussion when compared with the need of a sound policy for the protection of children.

It seems futile to discuss the results

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of gainful occupation upon children when the fact is so clear that children should not be employed at all. The action of the Supreme Court in declaring unconstitutional the Child Labor Law recently passed by the United States Congress is, of course, a sound legal action, but the purpose of the law marks a milestone in the right direction. If the United States government by Federal enactment cannot settle the question of child labor, the individual states have it well within their power to do so, and in one way at least the United States government has now taken steps to suggest standards for the normal development and physical fitness of working children.

Early this year the Children's Bureau of the United States Department of Labor called together a committee of specialists in child welfare to formulate a set of standards which would serve as a basis for those to be adopted by the various states, as the minimum health requirements for all children who expect to enter industry. It is true that such standards have no direct administrative or legal authority, as they are promulgated by the Federal government, but their moral force is strong and they point the way for enlightened state action. While the Committee as a whole has not reported, and while it is too early to give definite information about the form of their report, I think it is possible at this time to mention some of the physical standards which are considered the minimum that should apply to children entering industry. These conclusions should in no sense be considered as reflecting the views of or as coming from the committee in question. The majority of the standards outlined are those of New York City and have been proved to be entirely feasible and of the greatest importance to the welfare of the child.

#### Age Limit in Law

There is practically no state in the Union that requires a child to be over fifteen years of age when it first enters industry. The ages at which a child may go to work range from ten to fifteen years.

We may dismiss without comment the deplorable condition of affairs that would allow any child between the ages of ten and fourteen years to be employed in a gainful occupation. Such laws are barbarous, and a decent and enlightened public sentiment should demand their repeal. It is also questionable whether any child under sixteen years of age should be allowed

to enter the industrial field. No one can reasonably expect that children under sixteen years of age can be entirely kept away from home occupations or the minor forms of helpfulness which every boy and girl enjoys. There are many kinds of employment which cannot have any serious effect upon the health of children, when they are under family supervision, when only a few hours a day are devoted to the employment and when the work is liberally interspersed with play. The difficulty, however, is that there are no laws which would limit occupation at these ages in this manner.

When a child is once allowed to go to work, there is very little control over the type of industry which it enters. It may be an industry requiring an amount of strength and endurance far beyond the physical ability of the child to supply, or it may be one which, from its very nature, is injurious to the health of the child.

Any form of industrial employment may be harmful to children during adolescence. It may not be essential to afford the same protection to boys during this critical period of life as it is to girls, but certainly the boy between fourteen and sixteen years of age should not be subjected to any unusual strain, and the girl between fourteen and sixteen years of age should not be allowed to have any physical strain at all. When one remembers that in the United States 35 per cent of all infant deaths occur during the first month of life, and that this large proportion—one-third of all baby deaths—is due to conditions affecting the health of the mother before the baby is born, it will be realized that the effect of industry upon girls during the period of puberty has not yet been fully measured. There can be no doubt whatever that many type of employment to which the adolescent girl is subjected can have such serious and far-reaching effects that they may be shown not only in chronic invalidism to the girl in question but may seriously interfere with the possibility of motherhood in her case and may even be detrimental to the health of the next generation. There can be nothing clearer, to my mind, than that it is the duty of the state to protect the health of children and women. Therefore, it would be desirable if a minimum standard age of sixteen years could be established in all states for the entrance of children into industry.

From a physiological point of view, these children should be kept under observation until they are eighteen

years of age, and repeated physical examinations should be made of them at stated intervals during the two years, in order to determine the effect industry has had on their physical well-being. If any deleterious effect can be shown, provision should be made in the law that such child be barred from industry for a period of time necessary to regain health.

#### Character of Occupation

The type of work the child performs may have a most important bearing upon its health. For that reason, the employment certificate should always be issued for a particular job, and should be issued in the name of the employer. No new certificate should be issued unless the child has had a physical examination and is shown to be in sound health, and physically fit to perform the work he intends to do. Repeated physical examinations of this type will, in time, show the effects of various industries upon the health of children and will, in the meantime, protect the child to a very great extent from entering an industry that may have a serious effect upon his physical well-being.

When children are continuously employed in any position for more than one year, provision should be made for yearly physical examination of each child. Such examinations might well take place in the industrial plants or at the office of the official who issued the original employment certificate. If carried on in the industrial plant, it might easily be part of a general program for industrial hygiene and as such offers an opportunity in a field which has hitherto been neglected.

#### Minimum Standards of Fitness

No child should be allowed to go to work unless he is in sound physical health and physically fitted to perform the work he intends to do. "Sound physical health" should here be interpreted in a literal manner. Deviations from the physically normal may not seem to be either a symptom or a cause of ill health, but the future consequence of such physical defects may easily be serious enough to form a definite handicap to proper physical development.

The type of defects for which men were rejected in the draft were those which are commonly encountered in children applying for employment certificates. If 39 per cent of our young men between twenty-one and thirty-one years of age were rejected in the draft because of these prevent-

able and easily remediable physical defects, it is a clear indication that the ultimate injury resulting from such defects warrants more serious consideration during the period of childhood than any we have ever given before. Practically all these defects begin in early childhood. If neglected during the school age, they may establish abnormal physical conditions which will be permanently harmful. If they still exist at the time the child reaches the stage of adolescence and wishes to go to work, the final opportunity is presented for correcting them before they do definite harm. For these reasons, every child who wishes to go to work should be subjected to a thorough physical examination. It is probable that the Committee on Standards of the Children's Bureau will recommend a definite form of examination, standardized so that there can be no question as to its thoroughness. At this time it is sufficient to say that any examination of the child before he enters industry should cover the following points: height, weight, general physical conditions, condition of nutrition, maturity, examination of the skin, eyes, ears, mouth, nasopharynx, glands, heart, lungs and abdomen. Orthopedic defects should be noted, and diseases of the nervous system and disturbance of the menses are also of importance.

The standards of height and weight which have been used by the Department of Health of New York City for a number of years are:

Fourteen years...58 inches...80 pounds  
Fifteen years...58 inches...85 pounds  
Sixteen years...59 inches...90 pounds

No difference has been made in the requirements for height and weight of boys and girls because it has been felt that while boys may be noticeably taller and heavier than girls, the latter are entitled to greater protection. Their standards, therefore, have been made as high as those for boys.

When a child is found to be 10 per cent below the proper weight for his height, he should be examined by two physicians to determine whether this underweight is the result of undernourishment or other bodily defect or whether it is a racial or family characteristic. In the latter case, of course, there may be no physical disability and if the child is found to be otherwise in good condition, the employment certificate may be issued.

It has been found that certain types of physical defects may be easily remedied, and if we are to issue employment certificates at all, it hardly

seems fair definitely to refuse a certificate to a child who could be put in sound health with a reasonable amount of care. Such cases, therefore, are classed as having the certificates "temporarily withheld" and only where treatment is not obtained after a reasonable length of time is the certificate refused permanently.

The opportunity for affording proper health supervision and adequate treatment to the children who are found to be physically defective is one of the most important results of physical examination. The standards and methods carried out in New York City may be taken to indicate what may be considered the minimum for any state that wishes to prevent the employment of any child who is physically unfit. The standards brought out by New York City have recently been adopted by the rest of New York state.

Physical defects which justify permanent refusal are: (1) cardiac disease; (2) tuberculosis or other evidence of serious pulmonary disease; (3) tuberculous or syphilitic disease of joints and bones; (4) irremediable defective vision; (5) trachoma; (6) serious orthopedic defects; (7) malnutrition, equivalent to Grade 4 of the Dunfermline scale; (8) chorea; or (9) total deafness.

Every effort is made to see that children who are refused employment because of physical defects are referred to some appropriate person or agency for whatever medical or other assistance is needed.

Temporary refusal is based upon the following defects: (1) Defective vision subject to correction by lenses; (2) contagious eye and skin diseases; (3) defective teeth: extraction or treatment needed; (4) malnutrition, equivalent to Grade 3 of the Dunfermline scale; (5) untreated hernia; (6) hypertrophied tonsils, where there is evidence of serious obstruction or diseased condition; (7) defective nasal breathing, causing complete occlusion of the nostrils; or (8) tuberculous glands.

All children who are temporarily refused employment certificates because of the existence of physical defects which may be curable under proper treatment, are referred to the care of the school nurse of the Bureau of Child Hygiene, who assumes responsibility for the case and makes every effort to see that the necessary medical treatment or other care is secured for the child. When such care has been provided and the physical defect has been corrected, the employment certificate is issued.

In diagnosing malnutrition, weight in relation to height, and both in relation to age, are taken into consideration as one of the factors. The same qualifications noted under "minimum standards of height and weight" are applied in this connection. Children who are 10 per cent below the minimum weight for their height and age must be examined by two physicians to determine whether or not the underweight is the result of individual or racial characteristics or whether it is due to some undernourished condition. It is realized that undernourishment exists in varying degrees. The Department of Health of the City of New York has for many years classified cases of undernourishment according to the Dunfermline scale.

This scale recognizes that there are certain indications of undernourishment other than insufficient weight in relation to height. The facial expression of a child, the presence of dark circles under the eyes, look of extreme fatigue, evidences of anemia, flabby muscles, slouchy position, hollow chest, winged scapulae and other indications of a loss of physical tone, are all taken into consideration. The degree of undernourishment is indicated by using the Dunfermline scale, as follows:

(1) *Excellent*.—Indicates that the child is in splendid physical condition and absolutely sound health.

(2) *Good*.—Indicates that the child falls below the standard of "excellent" yet does not show any definite signs of undernourishment.

(3) *Needing health supervision*.—Indicates that the child shows definite signs of undernourishment and needs health supervision.

(4) *Needing medical care*.—A child in this grade is in an advanced stage of undernourishment and should be under medical care.

The application of such standards to New York City has resulted, in the year 1919, in the absolute refusal of 3.17 per cent of all children who applied for employment certificates, on the ground of physical defects. During the first three-quarters of 1920, of the total number of children who applied for employment certificates, 3.15 per cent were refused because of physical defects. These figures, of course, refer only to children who have defects which cannot be corrected. The children who have defects which may be easily remedied are, in most instances, given their employment certificates eventually and do not enter into this calculation.

In this connection it may be of in-



terest to state that during 1919, 49,294 employment certificates were granted and 2,306 were refused. By far the greater number of these were refused because of physical incapacity (1,668). The other classifications were insufficient tuition, 44; insufficient education, 10; under age, 27; over age, 557. An analysis of the causes of rejection for physical incapacity shows the following:

	Per Cent
Malnutrition .....	9.65
Cardiac disease .....	20.26
Pulmonary disease .....	1.08
Defective teeth .....	30.50
Defective vision .....	16.42
Adenoids and enlarged tonsils..	9.60
Miscellaneous defects .....	12.39
Total .....	100.00

In determining the physical status of the child, certain other items must be taken into account. Race and na-

tionality, age and sex, as well as family history, have a marked bearing upon the matter. For the purpose of determining the child's fitness to be employed, the intended occupation should always be ascertained.

While future study is necessary, if we wish to determine whether children who are only partially physically disabled may go into certain types of industry, for the present, at least, if we are to afford full protection to our children we must consider that no child who is physically abnormal should engage in any gainful occupation whatsoever. Such a standard is not impossible of achievement. It has been successfully maintained in New York City for a number of years. Even this, however, is not the goal towards which we should be working. From the point of view of the eco-

nomie status of adult labor, the serious effects of lack of education or illiteracy and the lasting harm that may result from industrial employment of children during the period of adolescence, it seems that, in this country at least, the arguments against the employment of children far outweigh any advantages that have been mentioned in its favor. The experience of twenty years in close relation to this subject has convinced me that child labor is neither necessary nor desirable, that it may have an exceedingly harmful effect upon the physical development of children and that the employment of any child under sixteen years of age should be prohibited. Surely, this great and rich nation does not need to live on the earnings of its young.

## The Industrial Surgeon and Individualization

BY RALPH B. BETTMAN, M.D., CHICAGO

AS industrial medicine continues to develop it is found that more and more diseases come under its scope and instead of being confined to traumatism, lead colic, and chemical dermatitis it is gradually embracing a very large field. A physician engaged in industrial medicine is confronted with a variety of problems about which his medical brother who is not dealing with industrial groups knows little. The etiology and symptomatology may be different and the treatment even more so.

The laboring man depends for his existence on the time he can work. Unlike the average business man, a lay off means instant loss of revenue. Stock dividends are not coming in to help buy the groceries; there are no well filled shelves of merchandise, the sale of which brings in funds to clothe the family. Every hour lost is an item on the debit side of the ledger. The industrial surgeon must constantly keep this in mind and adapt his treatment accordingly. There are numerous occasions where the length of the period of total disability can be greatly reduced. Or an operation may be definitely indicated which in a patient belonging to a different group might be postponed or entirely supplanted by medical treatment. For example, an operation for a gastric ulcer would well be employed much earlier in the case of a man whose weekly pay envelope is a matter of prime importance than in

the case of a patient who can afford a protracted course of medical treatment.

Again, it may be wise to counsel against certain operative interference and resort to temporizing methods. A worker engaged in a sedentary position may be able to postpone indefinitely an operation for an inguinal hernia, wearing, if necessary, a truss. A buttonhole maker would feel no ill effects from a hernia while in a presser, who must use a heavy iron, would require operative relief. In timing an operation of choice the economic conditions play an important rôle. In some instances it is wise to delay until such a time when the worker may be out of employment due to the seasonal layoff, or an operation may be hastened to permit the patient to be ready for work when an expected "rush" will result in overtime and the concomitant increase in pay.

Not only in the larger problems, but in the smaller details has the industrial surgeon a chance to help keep the patient as a wage earner in spite of his illness. A very small bandage for a cut finger may enable a stenographer to remain at work, while a very large bandage for the same condition may afford the necessary protection so that the freight handler will not "lose time." A sales clerk can not work with an unsightly dressing, while a man exposed to grime and dirt may need a large dressing to prevent contamination.

In short, the industrial surgeon must continually bear in mind the economic condition of his patient; he must realize that the time element is a most important one, he must question every procedure to assure himself whether it could be substituted by some other method which would shorten the time of disability. As Robert Osgood most aptly put it recently, "the importance of gaining the largest amount of function in the shortest possible time is paramount."

### Labor Office Reports on Lead Poisoning

The International Labor Office issues in its Legislative Series a British Act to make provisions for better protection of women and young persons against lead poisoning, dated the 23rd of December, 1920. According to the Act, it is not lawful for any person to employ women or young persons on work at a furnace where the reduction or treatment of zinc or lead ores is carried on; the manipulation, treatment or reduction of ashes containing lead, the desilverizing of lead, or the melting of scrap lead or zinc; the manufacture of solder or alloys containing more than 10 per cent of lead; the manufacture of any oxid, carbonate, sulphate, chromate, acetate, nitrate, or silicate of lead; mixing or pasting in the manufacture or repair of electric accumulators; the cleaning of workrooms where any of the processes aforesaid are carried on.

# The Housing of the Unskilled Wage Earner

STANDARDS as observed in the United States for the housing of wage earners are the subject of a recent study by Edith Elmer Wood. One of the incidental benefits of the war was that it awakened us to the importance of housing. "No nation can rise higher than the level of its homes. Whether we approach the subject from the point of view of health, morals, child conservation, industrial efficiency, Americanization, or good citizenship, the housing problem is fundamental." A place to live in is as important as a place to work in, and, if people are to work efficiently and well, they must have real homes to go back to when the day's work is done,—not simply a roof and a bed. It is the purpose of this book, as explained by the author, to afford a basis of authentic facts on which to develop a comprehensive housing policy and for the critical interpretation of the facts. American as well as foreign housing standards and conditions are discussed and criticised as to their shortcomings and successes; the various methods for meeting the situation and the extent of success and adaptability of the foreign schemes to our own conditions are fully analyzed.

It is estimated that about one-third of the people of the United States are living under subnormal housing conditions; that is, which fall below the minimum standard developed later, and about one-tenth are living under conditions which are an acute menace to health, morals, and family life, conditions which tend to produce degenerative changes in those subject to them.

Certain minimum standards of floor space, window space, cubic air space per occupant, size of courtyards, plumbing, fire escapes, repairs, and cleanliness, have been enacted into law, but until 1895 the Trinity Church Corporation fought the provisions of the New York Tenement House Act of 1887 requiring running water on each floor of a tenement house. The question as to whether a bath tub is a luxury or a necessity is still undetermined.

The housing problem may be stated briefly in two ways: how to avoid bad houses and get good houses, or how to get good houses and avoid bad ones. This is the positive or negative approach to the situation result-

ing in the two types of law; the constructive type which aims to increase the supply of good houses, and the restrictive type which seeks to prevent the erection or maintenance of bad houses, through the establishment and enforcement of minimum standards of light, ventilation, sanitation, and safety. Both, of course, are essential to a well rounded policy, but a high standard of restrictive legislation will not be enacted, or if enacted will not be enforced because of the resulting house famine, the only alternative being a relaxation of standards. The housing problem is two-fold and must have a two-fold solution: houses must not be built or occupied which fall below an accepted standard, and enough houses must be built in conformity to supply the demand.

There is no question, according to the author, about the possibility or rightness of a solution, "the housing problem *must* be solved. . . . If we were not utterly blind and heedless, we would go to any length, make any sacrifice to enable every child to spend his first five years, at least, while the foundations of his health, his mind, and his character are being laid, in the environment of pure air, sunshine, cleanliness, and serenity."

There is a very full discussion of the housing conditions in the United States, a history of housing in New York, tracing the various investigations and suggestions offered for solution. Washington, Boston, San Francisco, Baltimore and others are shown not to be without fault. The legislation developed, the Vieller Model Housing Law, the Tenement House laws and Administration in New York and other states; and city legislation are all considered. The Vieller Model law and the administration of the New York Tenement House Department are said to be the best contributions yet made in the United States to the housing experience of the world. Modern housing under private or corporate initiative is developed, but, as is pointed out, philanthropy can set standards but cannot supply the demand for cheap and wholesome homes for workingmen. Housing by employers sometimes provides satisfactorily for health and comfort, sometimes not. It is at best a makeshift and will never furnish the final solution unless we go back to feudalism. "The instinct of the workingman who dis-

likes the company house, the company school, the company store is sound. The system is undemocratic, un-American, and the workingman who accepts it gives up a considerable share of his independence."

## A Real Shortage

There are housing conditions not only in the United States but universal in character which should not be tolerated in any civilized community. "The fundamental trouble is the scarcity of wholesome houses of an acceptable standard at a low enough rental for the rank and file of unskilled wage earners." The methods tried in this country have been tried in Europe. The state as well as the city has undertaken to supply houses; loans are made to non-commercial housing companies; to individual workers, and tax exemptions are granted. England has been one of the pioneers in this field. Belgium, France and Germany have all followed suit, as well as other European countries, South America, and Cuba.

The work of the Massachusetts Homestead Commission, the Oklahoma loan experiment and town planning legislation is reviewed. American cities on the whole, however, have paid comparatively little attention to housing as a part of their comprehensive city plans. The building and loan associations have been a great force in America and the whole system with government aid in the form of loans, given only to those associations which met specified requirements might well be adapted to fit the needs of unskilled labor.

In spite of the constitutional and other objectives to the policy of constructive housing legislation, there seems to be no insuperable object "if and when the people decide they want it." The author proceeds to develop an outline of a comprehensive housing policy for the United States based upon suggestions and observations recommending both restrictive and constructive legislation, national, state and local, which would involve a national housing commission, postal saving deposits, loans to individual workingmen and housing loans by national banks and other measures.

In the last analysis, the housing of the unskilled worker is America's next great problem, the one to determine our progress or decadence. With housing as it is in many places today the health of the nation is impossible.

\*Wood, Edith Elmer: *The Housing of the Unskilled Wage Earner*, New York, Macmillan, 1919.

# INSTITUTIONAL HEALTH

*The Health Problems of Schools and Colleges, Hotels, Summer Camps, Children's Homes and Homes for Dependents*

## Health Measures at Culver Military Academy

### The Quick Reaction Time in Athletic Games Serves Well in Other Crises

BY L. R. GIGNILLIAT, COLONEL, U.S.R., SUPERINTENDENT, CULVER, IND.

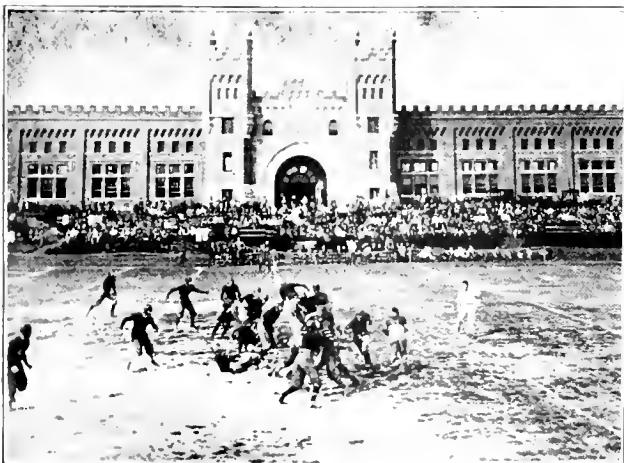
IN THE care of the health of the student body at Culver, prevention is the thing. In the first place, the sanitary conditions into which the boy is invited are carefully planned, and constantly supervised. The buildings are modern in every respect, although the quarters are not elaborate or luxurious. Much attention is given to the careful and thorough ventilation of dormitories and class rooms. The water supply is abundant and easily accessible, and safeguarded to the last degree against contamination. Frequent analyses are made to insure against possible pollution. In the more than twenty-five years of the school's history, there has never been a case of typhoid fever which developed on the grounds.

The care and preparation and serving of the food receive more than ordinary attention, and on more than one occasion Culver has received the highest commendation from experts in such matters. Dr. E. C. Rosenow, in reporting on the inspection made of these conditions, stated that in his wide experience he had never seen a food supply handled so efficiently and satisfactorily from the sanitary standpoint as at Culver.

#### Examined and Re-examined

At the beginning of each term each cadet is given a thorough medical examination immediately on his arrival—first, to make sure that he is not bringing into the institution any contagious or infectious disease, and second, to determine whether or not

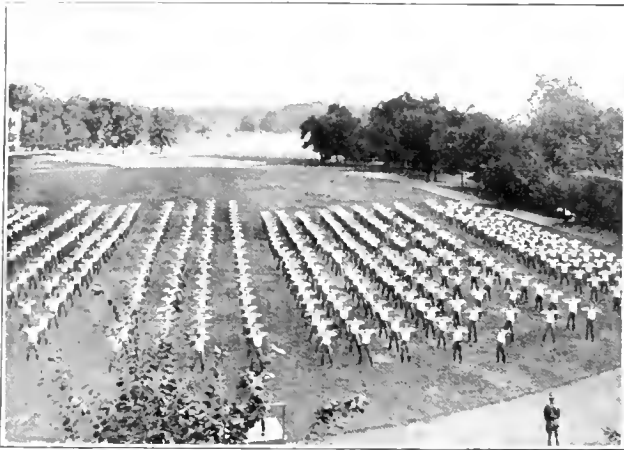
he is physically able to carry on the work prescribed. A second examination is made after a lapse of two weeks, which is a sufficient time to cover incubation period of practically all infectious diseases. This physical examination is required after the Christmas recess, as well as at the time of entrance. Coincident with the medical examination, careful observation is made of any malformation or deficiencies of development which may be capable of correction by physical exercise, and when such defects are found, the cadet is assigned to appropriate corrective work under instructors in the physical department. The accompanying photographs of the correction of faulty carriage illustrates to some extent what may be accomplished in this direction. Care-



The Academy is located on one of the larger lakes of northern Indiana, with extensive immediate grounds, and surroundings which promote outdoor activities.



The benefit of competitive vigorous athletic games is not confined to a few, but is universally enjoyed.



In order to prevent sluggishness between class periods group calisthenics are employed in the form of setting up drills which react favorably on instructor and pupils.



The supervising surgeon sees to it that none takes part in the more strenuous contests who is not physically fit. Individuals with defects or inherent weaknesses receive specific exercises.

ful records of all these examinations are kept and are available at any time, and serve as a guide to the boy's physical development, and a check, if needed, to his athletic activities. All forms of athletics are encouraged, but over-athleticism is not only discouraged, but is dis-allowed. No cadet may enter athletic practice without the approval of the school surgeon, nor may he participate in any athletic contest without adequate preliminary training under the supervision of an experienced coach. Overstraining of the heart and general physical exhaustion are prevented by this rule. Some accidents, of course, happen to players in any of the more vigorous forms of sport, but it has been our experience that practically all of the more serious accidents have occurred during unsupervised play.

Athletics, as a factor in health and in general development, seem to us to have such great value that every boy is urged to participate regularly in some form of athletic activities, and on at least one day each week, the military drill gives place to required athletic work. A recent canvas of the cadet corps of seven hundred boys showed that all but six were participating in voluntary sports. It has been our observation that, as a rule, reasonable regular activities react favorably not only on the health of the cadet, but on his academic record as well. In the arrangement of the academic work, there are six class periods between breakfast and dinner. In order to prevent sluggishness in the latter periods, we inject a short period of calisthenics and setting up drills, out of doors on the parade grounds unless prevented by stormy weather. This allows a thorough ventilation of the class rooms, stimulates the physical and mental activity

of the boy, and by the method employed, develops team work and co-operation between the members of the corps. This break in the program undoubtedly reacts as favorably on the instructor as on the student.

The Academy is most favorably located on the shore of one of the larger lakes of northern Indiana. The immediate grounds are quite extensive, and around it lies a very interesting country, a combination of conditions which provides an unusual variety of sports. At the proper season the boys enjoy swimming in the lake, but this also is under strict supervision. During the winter months the sport is enjoyed in, the exceptional indoor pool. Here again,

the best of sanitary conditions are assured through continuous filtration and through the sterilization of the water by the ultraviolet ray.

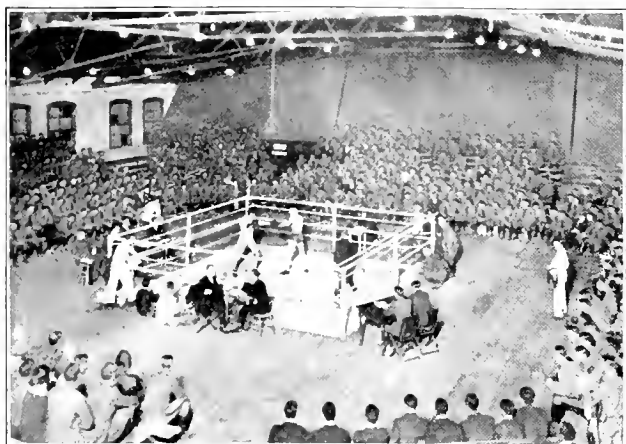
#### Surgeon in Charge

Of course we maintain a small hospital or infirmary. A surgeon in charge has supervision, not only of this hospital, but of all the sanitary conditions and physical activities. His immediate force consists of an assistant surgeon and two graduate nurses. This force is supplemented as may be required.

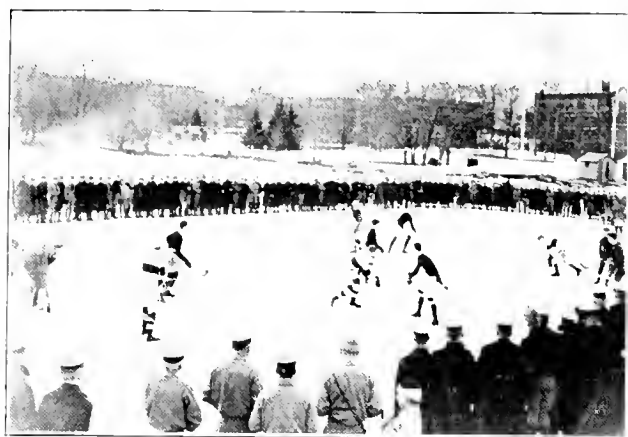
Before breakfast each morning a sick call is held at which time any cadet who is indisposed reports for proper attention. Inasmuch as no



What appropriate corrective exercise may do for faulty carriage is well illustrated in this serial record of actual work done. Parallel records are kept which serve as a guide to the boy's physical development and, if need be, as a check to athletic activities.



No cadet undertakes athletic practice or enters any form of contest without adequate preliminary training under an experienced coach.



The location of the Academy favors a wide variety of sports. Winter is not an indoor season here.

one else on the grounds is authorized to excuse any man either from academic or physical duties, it follows that even slight illnesses come to the surgeon's attention in their incipency. In the event of the development of any contagious disease, prompt isolation is thus possible, and epidemics of serious proportions have not occurred except during the prevalence of influenza three years ago. Even here our experience was most fortunate. There were one hundred fifteen cases, but because of the promptness of recognition and hospitalization, we had not a single fatality nor a case of pneumonia complicating the original disease. Last year with the incidence of scarlet fever, the initial cases were in a hospital for slight malaise before the development of the characteristic symptoms. Not only were these cases and their room mates isolated, but there was instituted a daily inspection of every member of the corps. As a result the number of students infected was limited to twenty-three, five of these cases de-

ected on inspection were so slight that the boy was not conscious of any ill-feeling, but had a faint, though characteristic rash, the subsequent course of the disease verifying the diagnosis. Such slight cases are recognized by medical authorities as one of the most common means of the extension of an epidemic.

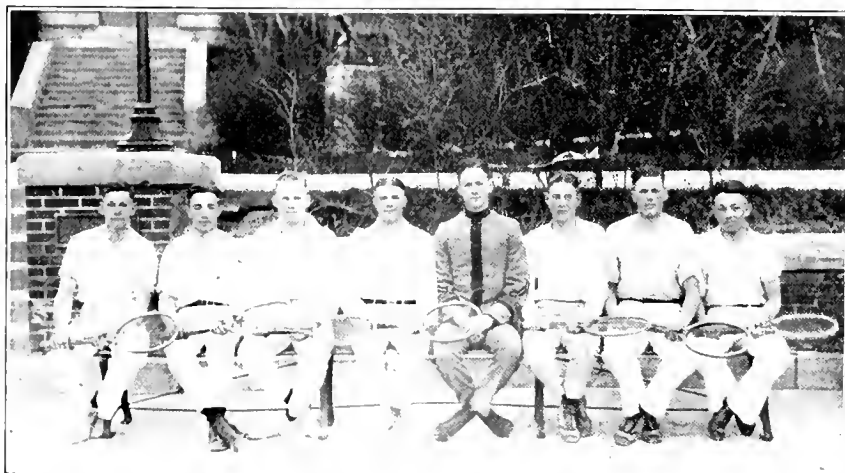
Our students are encouraged to report to the medical officers even trivial injuries or ailments, as they might eventuate in serious conditions. Attention to apparently insignificant conditions takes time and is at first thought expensive, but our experience has justified the expenditure of both time and money, and has commended itself to a clientele of thinking men throughout the country. We have known that our methods are somewhat unusual, but we had not considered them particularly remarkable until last year after our surgeon accompanied the group of three hundred American Boy Scouts to the International Jamboree in London and through France and Belgium, and on

the tour applying the same methods. The Surgeon General of the United States, learning of the health record of the boys on this trip, concluded his official record of the matter as follows: "This ideal record of handling and preventing communicable diseases demonstrates the results that may be attained by careful and thorough physical inspection . . . by detailed attention to cleanliness, and by prompt segregation and treatment of all conditions which may, perchance, be the initial symptoms of an acute infectious disease. The medical officers charged with the supervision of the health of this group of boys, are to be congratulated on ideal results accomplished."

The prevention of the introduction of infectious diseases, together with the régime instituted to build up the boy's physique and to increase his natural resistance to disease, has given Culver a health record second to no institution in the country, and has been a large scale health demonstration.

### Standardizing Tuberculosis Work

Attempt is being made to standardize the tuberculosis work of all relief giving agencies in St. Louis. Because of the frequency of tuberculosis among families for which "question as to the adequacy of treatment given such families has been a constant source of discussion," a questionnaire covering the medical, social, and economic and legal problems involved, as well as the plan for reconstruction, was sent out by the Tuberculosis Society of the St. Louis Social Service Committee. As a guide to similar studies this questionnaire is published in the April issue of the *Bulletin* of the National Tuberculosis Association.



A group of tennis enthusiasts. A recent canvass of the cadet corps of seven hundred boys showed that all but six are participating in voluntary sports.



# The University of Michigan Health Service

BY WARREN E. FORSYTHE, M.D., DIRECTOR, ANN ARBOR, MICH.

IN 1912 a well known student at the University of Michigan escaped from a local hospital during the delirium of pneumonia, and was found dead in the Huron River. While such accidents are not unknown to most general hospitals, the reaction upon the campus following that occurrence doubtless added much weight to the demand for a student health organization at this university. This was established in October, 1913. As at many other places, the organization here has been able to progress but slowly from the limitation of a student infirmary into the important fields of disease prevention and health promotion. The department had scarcely started to function, however, before the name of University Infirmary was replaced by the more ambitious title of University Health Service.

In cooperation with the departments of medicine, the Health Service has from the outset provided good service to sick students. Subsequent extensions have carried its influence into the realm of health conservation. This is a phase of public or group medical work rather recently but widely established in American colleges and universities. A bibliography of about sixty papers concerning student health work directly was recently compiled.<sup>1</sup>

## How Administered

The Health Service is an activity of University Administration. It is headed by a full time physician as director, and since 1916 its policies have been determined by the Board of Regents, without a faculty committee. The personnel at present consists of six full time general physicians, a pharmacist, two nurses, and three office assistants. Additional assistance is employed when needed, as during the examination of new students at the opening of the school year. Most of the hospital attention and consultation is provided by specialists of the medical schools in the University teaching hospitals, and the expense of such service is provided for by the Health Service budget. The physicians' salaries range from \$2,500 to \$5,000 for twelve months service.

While the scope of the Health Service is being gradually extended beyond the care of the sick and injured, it has as yet little control over athletics, physical education, and the



The Health Service Staff of the University of Michigan, 1920-21.

sanitation of the student's environment.

The work of the Health Service is supported entirely by a portion of student fees. Until 1917 the fee was \$4.00 per student annually, collected and dispersed by the University as

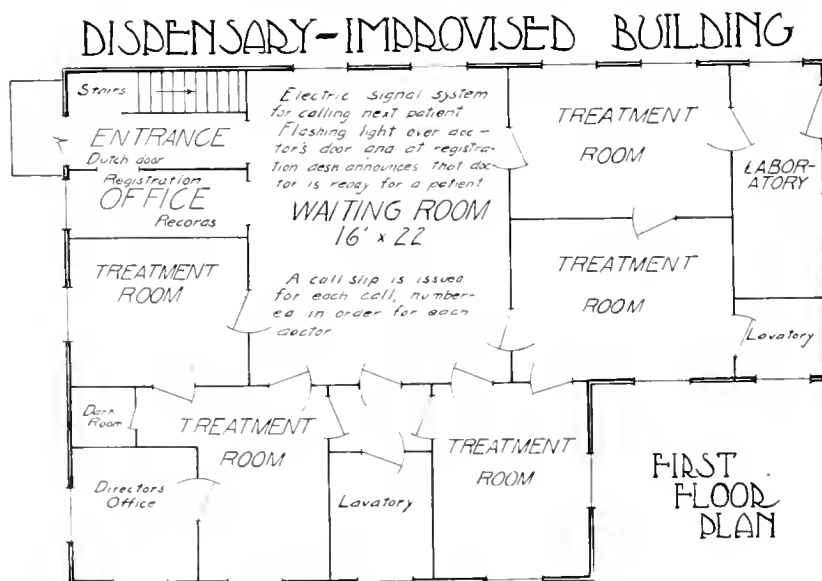
for other departments. The fee was increased to \$6.00 at that time, and the fees have supported the work.

The medical service to which a student in the University of Michigan is entitled for the fee paid is equaled in few if any other education institution in the country.

**Medical Examinations.**—Upon entering the University, all students receive a very complete medical and physical examination. The unprotected are vaccinated unless excused by the Director. A letter is written to the parent, stating the conclusions and advice resulting from the examination, and announcing Health Service privileges. The examination records are arranged upon a large folded card which is used for reference and as a folder for all subsequent Health Service records of that student. Starting this year with one additional class each year, a re-examination will be required of all upper classmen annually.

**Health Instruction.**—Freshmen are required to attend a series of six health lectures early in the year. This is inadequate and will probably soon be extended to a semester course.

**Dispensary.**—A Health Service dispensary is located near the campus and open five hours daily. Here students may receive promptly, unlimited office attention free, including x-ray examinations, drugs, dressings, vaccines, antitoxins, minor operations and refractions. Glasses are



Hospital attention and consultation are provided by specialists of the medical schools in the University teaching hospitals.

1. American Students Health Association, 226 Ingalls St., Ann Arbor, Mich.

2. Emerson, Haven, M.D.: Education in Health at Cornell University, Am. J. Pub. Health, April, 1921.



provided at moderate prices. Complete records of each patient are kept as well as data for general use.

### Room Calls and Epidemiology

Calls are made and students are cared for in their rooms when hospitalization is not demanded. This is often not so much from choice as because of the crowded condition of hospitals available. The department receives credit for small fees collected by the University for room calls. The number of such calls is not large.

One member of the staff serves as epidemiologist and supervises contagious diseases and their control. Such cases including acute tonsillitis are reported to him at once by other physicians.

**Hospital Care**—Because of fortunate cooperation with the teaching hospitals of the medical schools, the Health Service is able to provide the student complete hospital care free up to a limit of sixty days each year. Such care is generally limited to emergency operations and conditions which menace the immediate health of the student. Elective operations are not so considered, except in individual cases of self-supporting students. Staff physicians keep in touch with hospital patients and send reports to parents and interested faculty members.

**Other Services.**—A staff physician has charge of the health of the students at the summer school camps of engineering and biology located in another part of the state. Our physicians attend athletic games, and in numerous other ways render service to students directly and in cooperation with other members of the University. Athletic injuries are cared for by the Health Service the same as those resulting from other causes.

### Results Are Tangible

The question naturally arises: What tangible results can be shown from seven years' experience of such an organization? A general decline in dispensary calls per 1,000 enrollment since the work was well established is our best numerical fact. Not long ago the President of the University expressed the opinion that student illness had decreased and that attention to it had given the administration little concern since the organization of the Health Service.

Several factors, such as no records prior to 1913, variable popularity of some features of our work, and war conditions, cause us to hesitate as yet in drawing conclusions from much of our data.

A reduction in numbers of calls and

patients in itself may mean either a reduction in disease rate or an inferiority of service rendered. We believe that the former is the case here as there is no evident increase in student patronage of local physicians, with whom our relations are most cordial. Local physicians may make use of any of the Health Service facilities and privileges in the care of their student patients when a member of our staff, in a position of consultant, is able to approve of the expenditures involved.

While our organization and its work are far from perfected, we feel that students here receive medical attention which approaches the ideal, and at a small expense equalled in very few, if any, comparable communities or groups.

We feel that our statistics should be of interest not only for comparison with those of other colleges and universities, but as standards for any group of similar ages, and we are aware of our opportunity to work out and determine much that will have application to group medical work in general. The development of an adequate group service anywhere depends upon a candid and complete statement of the problem. The best basis of future expansion is scientific analysis of records. Conclusions so reached have a definite value and a very wide application. There follow herewith, condensed tabulations and charts to illustrate various phases of common disease incidence and other features of our experience.

### Annual Averages

From the records of seven years, the following annual averages of various items are given in terms of 1,000 students enrolled, (Tables A and B).

Staff earnings result from room call charges and from a small profit upon the sale of glasses. Hospital expense is low because of no overhead. It has averaged about \$3.25 per day per patient. Many cases would not be kept in their rooms as at present, if hospital space were available. A new hospital is being built, which, when completed, will provide ideal facilities. The general death rate in the United States for the age group 20 to 24 is about 5. The figure for major operations does not include electives as for hernias, chronic tonsils, deviated septa, etc.

Acute gonorrhea for the entire student body this year amounts to about 7 per 1,000 enrolled, and syphilis is probably not over double the figure given for our records.

TABLE A.—MISCELLANEOUS DATA PER 1,000 ENROLLMENT, ANNUAL AVERAGES.

Expenses (net means deduction of staff earnings):	
a. Salaries and wages (net).....	\$1,975
b. Current expense.....	420
c. Hospital care.....	1,200
d. All service (net).....	3,342
e. Staff earnings.....	187
Other data:	
a. Dispensary calls.....	3,157
b. Number patients.....	543
c. Room calls.....	82
d. Hospital patients.....	35
e. All deaths at University and elsewhere.....	1.13
f. Major operations.....	6

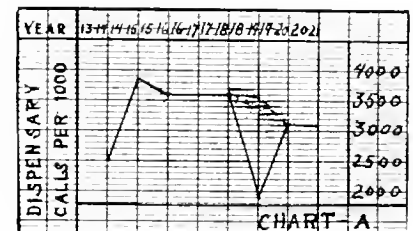
TABLE B.—SELECTED DIAGNOSIS PER 1,000 ENROLLMENT, ANNUAL AVERAGES.

Appendicitis, acute.....	6.0
Bronchitis, acute.....	28.0
Chickenpox.....	0.7
Diphtheria.....	1.0
Fractures.....	4.0
Furunculosis.....	27.0
Gonorrhea.....	3.0
Grip.....	16.0
Infections, local.....	25.0
Measles and Rubella.....	2.0
Mumps.....	3.0
Naso-pharyngitis, acute.....	76.0
Pharyngitis, acute.....	102.0
Pneumonia.....	1.0
Rhinitis, acute.....	122.0
Scarlet fever.....	1.0
Sinusitis.....	6.0
Smallpox.....	0.3
Syphilis.....	0.7
Trachietis, acute.....	37.0
Tonsillitis, acute.....	54.0
Tuberculosis.....	3.0
Scabies.....	3.5
Tinea cruris.....	4.3
Impetigo contagiosa.....	3.0
Otitis media, acute.....	3.5
Laryngitis, acute.....	21.0

### Comparative Annual Incidence

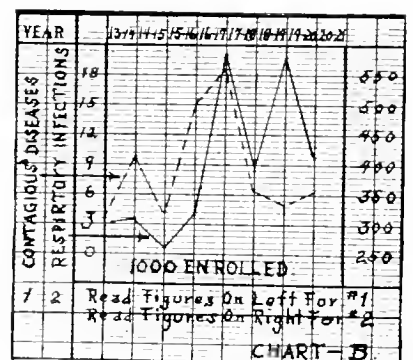
From seven years' records also, we give charts A and B together with Table C to show *annual changes*. For the remainder of 1920-21 after

CHART A.—GENERAL DECLINE IN DISPENSARY CALLS.



April 1, estimates have been made. The difference shown between the records for the war years, 1917-18 and 1918-19 is probably exaggerated

CHART B.—GRAPHIC RECORD OF CONTAGIOUS DISEASES. CHARTS A AND B WITH TABLE C SHOW ANNUAL CHANGES.



owing to uncertainty of actual university attendance. The general decline in dispensary calls as shown in chart A may be fairly interpreted as reduced illness among our students.

the months of the year. Curve A in Chart C shows dispensary calls as influenced by the medical examination of new students during October and by the vacation periods. The curve B

TABLE C.—COMPARATIVE ANNUAL INCIDENCE SELECTED DIAGNOSIS PER 1,000 ENROLLMENT.

	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21
Rhinitis, acute	101.	137.	113.	112.	177.	80.	151.	151.
Appendicitis, acute	5.	7.	7.	7.	5.	4.	8.	4.
Tuberculosis, active	2.	2.	7.	3.	1.	1.	2.	2.
Furunculosis	16.	23.	23.	16.	30.	24.	43.	40.
Gonorrhea	3.	6.		2.	2.	2.	1.	2.
Syphilis	1.	1.7	1.	.4	1.5	.16	.17	.37
Local infections	14.	15.	9.	13.	42.	20.	37.	40.
Tonsillitis, acute	70.	65.	48.	55.	97.	38.	32.	26.
Sinuitis	4.	6.	8.	5.	5.	4.	7.	7.
Typhoid	0.	0.	.16	2.1	.6	0.	.11	.37
Influenza	0.	0.	0.	0.	70.	33.	52.	0.
Scabies	2.	1.	2.	.4	2.3	4.6	8.	5.
Impetigo cont.	3.	2.4	2.6	2.3	4.	2.8	3.4	4.7
Tinea cruris	2.7	1.	6.	1.5	2.	3.8	6.3	10.
Otitis media, acute	4.8	2.6	8.5	4.2	4.	1.6	2.	1.6
Laryngitis, acute	26.	15.	19.	30.	41.	8.	26.	9.

In Table C, one notes the decline of venereal disease, tonsillitis and acute otitis media. In the same table we find that furunculosis, local infections, scabies and tinea cruris have increased. The diseases included in chart B are for the contagions; measles, rubella, varicella, variola, and scarlet fever, and for acute respiratory infections: rhinitis, tonsillitis, pharyngitis, bronchitis, tracheitis, sinusitis, laryngitis, nasopharyngitis, grip, pneumonia, and influenza.

CHART C.—GRAPHIC RECORD OF DECLINE IN VENEREAL DISEASES, TONSILLITIS, AND ACUTE OTITIS MEDIA.

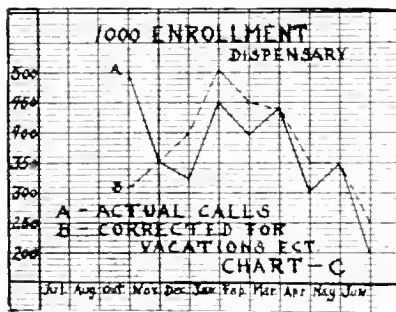
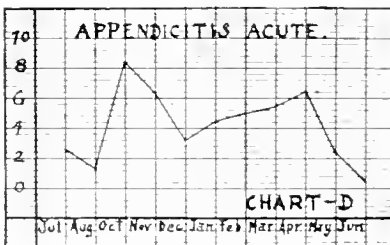


CHART D.—CONDENSED RECORD OF APPENDICITIS INCIDENCE.



### Seasonal Disease Incidence

From four years condensed records, we present Charts C, D, E, F, and Table D, concerning the average occurrence of common diseases during

shows the estimation of probable calls without those two influences.

TABLE D.—SEASONAL DISEASE INCIDENCE.

	July	Aug.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
Sinusitis	1.	.6	4.2	2.2	5.6	7.5	9.7	11.	3.	4.3	.12
Measles & Rubella	0.	0.	0.	.25	.5	1.25	6.	6.	3.	7.	0.
Diphtheria	.6	0.	.6	0.	1.	.8	.25	1.2	1.3	.3	.3
Infections, local	10.3	5.6	30.2	27.	22.7	39.2	31.	31.7	25.	30.	19.6
Furunculosis	9.	6.	29.7	37.	17.7	37.2	26.2	35.	18.	26.	13.

We have nothing to suggest as to the cause of the form of the curve in Chart D, and it is difficult to say just what factor in the life of students causes the most decline in skin contagions during the college year.

In Table D, one notes the comparative lack of seasonal influence upon furunculosis and local infections.

From our experience, we may conclude that women are more susceptible to the acute respiratory infections than are men students (Chart G). This is in accord with recent reports from Cornell University.<sup>1</sup>

### Other Considerations

To determine days of most calls, we have arranged our daily dispensary records for a typical year (Chart H).

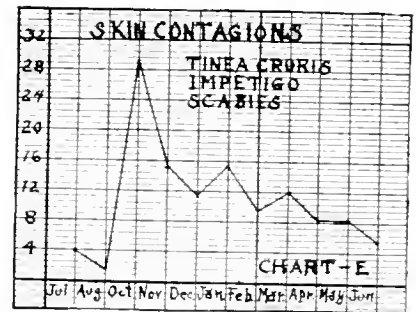
From four years' records of about twelve cases annually, it appears that active pulmonary tuberculosis develops in order of frequency in the following departments: Dental, Medical, Engineering, Law, and Literary.

### Conclusions

(1) Judging from the experience at this university, the demand for attention to sick and injured students will be the main influence in starting student health work elsewhere.

(2) Experience in organization here

CHART E.—SKIN CONTAGIONS GRAPHED BY MONTHS.



has justified an independent department, a small board of administration, a full time personnel, a broad policy in relation to local physicians in the care of sick students, support by a general student fee, freedom in student choice of physicians, and the development of preventive medicine and health promotion.

(3) From among results obtained we conclude that student illness has

been reduced; that medical attention has been furnished such as would not have been obtained otherwise by the majority of students; that the general fee has been a burden to none and has resulted in a blessing to many.

(4) From student health work in general we conclude:

(A) Active progressive health work among students in colleges and universities is well established and of importance for the following reasons: (a) It meets the obligation of the university to care for illness, prevent disease and promote health among students. (b) It has great educa-

CHART F.—INCIDENCE OF RESPIRATORY INFECTIONS.

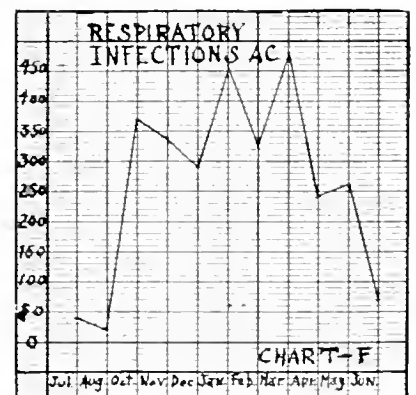
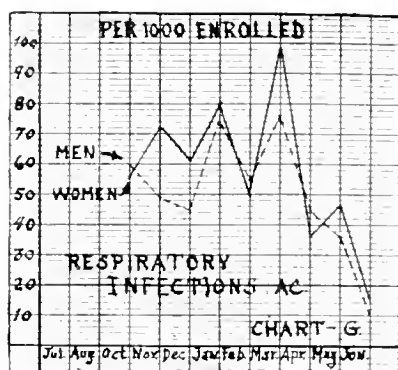


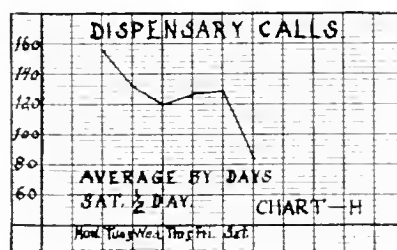
CHART G.—SUSCEPTABILITY TO RESPIRATORY DISEASE.



tional value in giving students experience with medical service under the

best conditions and should influence them to promote such health work in the communities to which they return.

CHART H.—DAILY DISPENSARY RECORDS.



(5) Health departments in educational institutions have splendid opportunities of solving problems, developing methods, and setting stand-

ards for future community medical work.

### Laboratory Association Formed

There was organized in Atlanta, Ga., March 16, the Southern Health Laboratory Association, which is the first association in the United States of public health laboratory workers for the purpose of securing uniformity of methods and procedure among the public health laboratories of the Southern states. Representatives of health departments in seven southern states were present and the following officers were elected: President, Dr. Clarence A. Shore, Raleigh, N. C., and secretary, Mr. T. F. Sellers, Atlanta.

## Therapeutic Achievement With Radium

MUCH recent interest has centered about the subject of radium, the rare metal which is so full of potentialities, and which is so rare and precious that disputes have arisen concerning what uses are the most profitable for the small amounts available, and whether proportionately large amounts should be devoted to ultrascientific research of remote application to industrial and medical problems.

A peculiar fitness attached to the gift of a gram of radium to Mme. Curie in her recent visit to the United States, the French scientist who first isolated and named the metal.

Formerly the world supply of radium came from the pitchblende of Bohemia, where it occurs in pockets in widely separated localities, so that

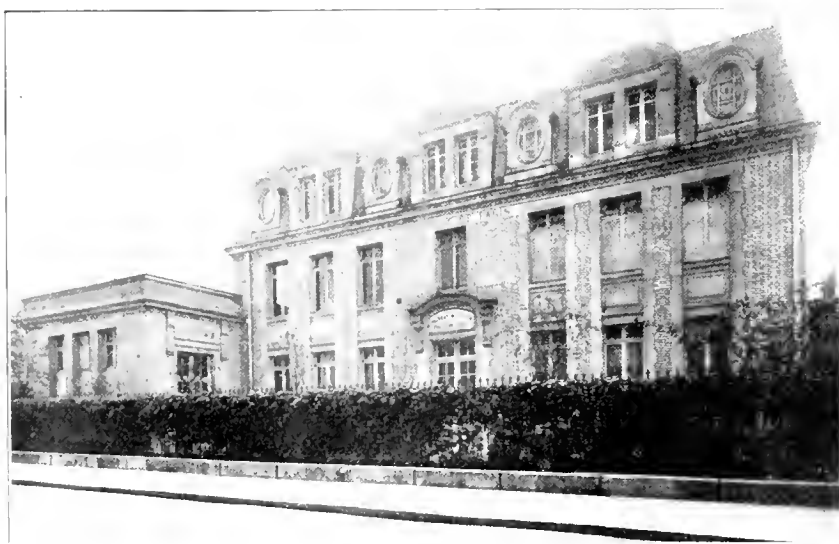
no steady supply could be assured. Recent discovery of relatively abundant deposits in Colorado and Utah promises to remedy this condition to some extent. Its price cannot be greatly reduced, however much may be mined, until the cost of its extraction and purification can be reduced.

The stimulation of scientific curiosity incident to the discovery of radium has resulted in an immense amount of research in many different directions. The release of energy in the process of its disintegration has suggested new and unlimited sources of power, the energy released in this disintegration of one gram of radium giving rise to fantastic theories of the possibility of releasing atomic energies in other or all elements for utilitarian processes.

Radium gives off three kinds of rays—Alpha, Beta and Gamma. The radium rays are electrical in nature,



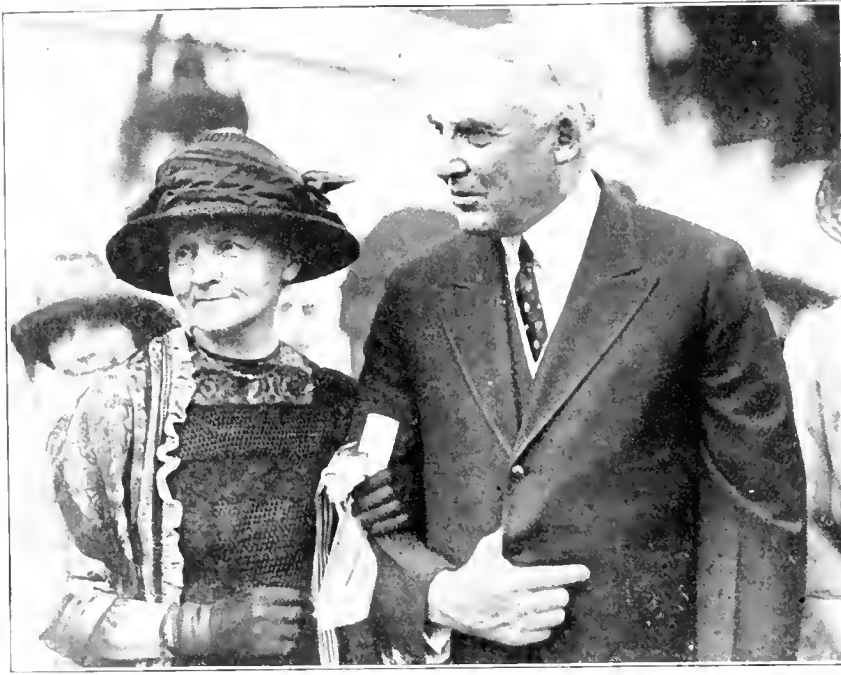
International.  
Apparatus employed in the Pasteur Pavillon, Paris, for the treatment of cancerous tumors by radio-active substances.



International.  
The Institut du Radium de Paris, where Madame Curie conducts her researches on radium.

the Alpha, or positive ray, constituting about 90 per cent of the total emanations.

Only the Gamma ray is utilized in the treatment of cancer, as the Alpha and Beta rays produce untoward effects. Radium has been fully demonstrated to have reliable therapeutic uses. The Radium Institute of London has issued a recent report of successful achievement and an account of the best forms of apparatus and the technic which is calculated to use radium efficiently and economically and to prevent cumulative harmful



International.  
Madame Curie, who first isolated and named radium, receives from President Harding a gram of the precious element as a tribute paid her by the women of America.

effects to those who constantly work with radium. They report a total of 822 cases of cancer seen for the first time during the year, of whom 22 were cured, 101 apparently cured, and 328 improved. The report emphasizes special points of merit which have been developed in American technic.

Research in this connection at Harvard University has led to the discovery by Dr. H. Duane of a more penetrating x-ray which will supplement work with radium on the alleviation of cancer at the Collis P. Hunt-

ington Hospital at Boston, an institution which is devoted to the work with x-ray and radium. Radium treatment of nerve tissue tumors is a noteworthy achievement.

While some complaint may come from scientific circles of commercial uses for radium, it is not to be forgotten that inestimable value attaches to the safety measures during the war made possible by its use. On the other hand, in the abstraction of the research laboratory which made possible the production of radium itself,



International.  
Using electroscope for the measurement of radium from the vial containing radium.

its full contribution in therapeutic uses is yet to be worked out.

## American Medical Association Elects Officers

The seventy-second annual session of the American Medical Association at Boston, just closed, was marked by the presentation of more than the average number of strictly scientific theses of great interest, and the discussion of medical service and the problems of the medical profession in the light of active public interest in health matters hitherto delegated entirely to professional initiative. Several of the leading addresses concerned themselves with phases of group practice, organization for health service, and the need of new ethics which would permit a more active leadership on the part of physicians in health matters and in educational enterprises for the benefit of the layman. While action on many matters was deferred to give opportunity for further investigation, the appointment of committees with powers to collect and report on the situation should crystallize opinion and make for leadership on the part of the profession.

The address of the incoming president, Dr. Hubert Work, was entirely concerned with the relation of the physician to the community and its problems.

Officers for 1921-1922 were elected as follows:

President-Elect—Dr. George E. de Schweinitz, Philadelphia, Pa.

Vice-President—Dr. Frank B. Wynn, Indianapolis, Ind.

Secretary—Dr. Alexander R. Craig, Chicago.

Treasurer—Dr. William Allen Pusey, Chicago.

Speaker of the House of Delegates—Dr. Dwight H. Murray, Syracuse, N. Y.

Vice-Speaker of the House of Delegates—Dr. F. C. Warnshuis, Grand Rapids, Mich.

Board of Trustees—Dr. Frank Billings, Chicago; Dr. Wendell C. Phillips, New York; Dr. Thomas McDavitt, St. Paul, Minn.

Judicial Council—J. N. Hall, Denver, Colo. (1926).

Council on Health and Public Instruction—Victor C. Vaughan, Ann Arbor, Mich. (1926).

Council on Medical Education and Hospitals—W. D. Haggard, Nashville, Tenn. (1926).

Council on Scientific Assembly—John E. Lane, New Haven, Conn. (1926).

# THE NATION'S HEALTH

(Continuing MODERN MEDICINE)

*A Monthly Magazine Devoted to Community Health with Special  
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Number 8

## Food Poisoning; Its Prevalence and Prevention

*Safe Measures Grow Out of the Pre-  
cise Investigations of the Laboratory*

By JOHN PHILLIPS STREET, INDIANAPOLIS, IND., FORMERLY CHEMIST, CONNECTICUT AGRICULTURAL EXPERIMENT STATION, NEW HAVEN, CONN.

PRIOR to the passage of the Federal Food and Drugs Act in 1906, and in the years immediately following, the question of food adulteration was of vital import to the American people. Since that time, due to the activities of both Federal and state food authorities, food adulteration has become a matter of academic interest rather than one vitally affecting the health of our people. Sophisticated food, of course, is not entirely a thing of the past, but it is no overstatement to say that food adulteration that is injurious to health is practically nonexistent at the present time, and that such adulterations as do persist are of economic importance rather than a matter affecting public health.

Unadulterated food, however, is only one phase of the food problem. Perfectly good, nutritious, and wholesome food may go to the food manufacturer, and by faulty processes, slovenly methods and insanitary practices be rendered less nutritious and wholesome, or in extreme cases become absolutely dangerous to the consumer. On the other hand, food may be prepared commercially with every attention to sound raw material, proper manufacturing technic, and the best modern sanitary practice; it may leave the factory or packing house a safe and wholesome food in every particular, and yet be rendered unsafe and unwholesome by careless

*Our chief health problems are man-made difficulties, growing out of the complex conditions of urban life. Not the least of these pertain to the transportation and handling of food.*

*Balanced diets for the whole people, and definitely prescribed rations for those whose nutritional needs are exceptional, are alike futile unless community efforts safeguard the food supply.*

*Food poisoning, therefore, should suggest forethought, not fear, and rigid inspection according to scientific standards to take care of the situation.*

storage or handling in the institution, hotel, or private home where it is consumed. Such a condition is even more prevalent among "fresh" foods that go to the consumer in their natural condition or which undergo no manufacturing process. In fact, foods of this class are, generally speaking, by far a greater source of danger than processed foods, for the latter have usually undergone a cooking process that very greatly increases their margin of safety.

The Federal Meat Inspection Act practically assures the consumer that the meat he buys is sound, free from

pathogenic organisms, and is packed in a clean and sanitary packing house by clean workers, free from infectious or contagious diseases. Government inspected meat is sound and wholesome when it leaves the packing house, practically without exception, and in the transportation of the meat products from one state to another the Government still maintains a careful watch that the product on which it has placed its stamp of approval is not allowed to deteriorate during transit due to careless or unintelligent handling. Once in the local market, the responsibility for its proper keeping rests on the state or municipal authorities, and this responsibility is assumed with varying degrees of efficiency in different sections of the country, in the effort to force the wholesaler and retailer to maintain the excellence and wholesomeness of the product. When the meat is not Government inspected, where the product of local slaughter houses, inadequately supervised, is allowed to go into the market, there may be distinct menace to the health of the consumer. But no matter how much care is exercised by Federal, state or municipal authorities, the responsibility for the proper keeping and preparation of the meat in the home or institution rests very largely on the ultimate consumer.

Similarly, many safeguards are thrown around the production and





Keystone View Company.

The port of New York City is the largest receiver of foodstuffs in the world. Food inspectors are on the job twenty-four hours of each day as food is handled at the piers and terminals.

sale of milk. Unfortunately, however, raw milk is peculiarly liable to infection and in spite of official inspection, sickness due to contaminated milk is all too frequent. Here, again, all the advantage gained by official supervision of the production and handling of milk may be lost through improper care after it reaches the consumer.

In most of our progressive states sanitary codes are in operation which in a measure safeguard our food products during the various stages of manufacture and sale. There are so many food manufacturing plants, so many warehouses, so many shops, however, that proper official sanitary control of food establishments is almost impossible because of the cost involved. In this connection it is worth noting that certain industries have realized the importance of a strict sanitary control in their manufacturing processes, due in part to their appreciation of their obligation to the consumer to produce clean products packed by clean people in a clean factory, and in part due to their conviction that any food producer who is not willing to meet such requirements is a detriment to the industry and is entitled to no place in their councils or in their trade associations. The National Canners' Association, for instance, makes the qualifications just referred to essential to membership in its organization, and the statement, "Member of the National Canners' Association," on canned foods will possess increasing significance to the consumer as their ambitious project reaches its full development. The baking industry is contemplating a similar system of self-inspection, and more and more the

consumer is able to buy prepared foods with the assurance that the manufacturer has done everything in his power to render his product safe and wholesome and worthy of confidence.

### Food Poisoning Defined

If one were to base his judgment on the sensational headlines of our newspapers it would be easy to believe that food poisoning occurs with alarming frequency, and that with each mouthful of food we run the danger of serious illness, if not death. The fact that the consumption of food has been an essential human function since man's creation, and the further fact that authentic cases of death from the eating of infected food or foods in which toxins are developed are so rare as to possess real news value because of their rarity, should give us some reassurance and help us to realize that the eating of our meals three times a day is not such a desperate gamble after all. However, it cannot be denied that people have died from eating tainted food, and that in some cases the fear of such a contingency has greatly decreased the sale of certain kinds of food, almost driving them from our markets.

To gain a clear understanding of this problem it is well to consider just what is meant by food poisoning, how food possessing poisonous properties can be detected, and what precautionary care is needed to prevent food from "going bad" or from developing toxins that render its use dangerous to health.

Food "poisoning" is perhaps an unfortunate and somewhat misleading term, but its use is so prevalent that

no attempt at more definite terminology will be made at this time. For the purposes of our discussion we may follow Rosenau's<sup>1</sup> definition and consider the term to cover acute illnesses due to some injurious property of the solid or liquid food consumed. Food may be injurious to health from various causes. The following is a condensation of Rosenau's summary:

(1) *Natural poisons*.—Some foods are poisonous by nature, as, for instance, certain mushrooms, some varieties of fish, and certain plants containing potent alkaloids.

(2) *Animal parasites*.—Common types of animal foods showing parasitic infection are those containing *Trichinae* or tape worms; as a rule these are due to antemortem infection of the animal. Plant foods, likewise, may bear the eggs or larvae of animal parasites, which later may develop in the body.

(3) *Plant parasites*.—Most foods contain bacteria, and in some cases these may be pathogenic for man. Harmful bacteria come more commonly from animal than vegetable foods, raw milk being especially liable to this form of infection. Tubercu-

1. Author's Note: No originality is claimed for the materials presented in this article, but full acknowledgement is made to Dr. Milton J. Rosenau, who has kindly given me access to advance proofs of certain of his publications, and this contribution is essentially a condensed transcript of Rosenau's most recent investigations on the subject of food poisoning.



Keystone View Company.

That safeguarding the food of the American public is a stupendous job is shown by the fact that New York City's supply of eggs last year numbered about 177,470,520 dozen, the inspection of which is only a small part of the food inspectors' responsibility for the sanitation of the food supply.



losis, diphtheria, septic sore throat, and typhoid fever are important diseases which may be conveyed by some of our commonest foods or by the water we drink. The common cause of food infection is the Gaertner bacillus, or closely allied members of the colon-typhoid group.

(4) *Toxins*.—Poisonous substances may develop in the food due to bacterial action, as in the case of botulism.

(5) *Putrefactive poisons*.—Under this group come the so-called "ptomaines," decomposition products of protein. As Rosenau says: "Ptomaine poisoning is hypothetical and has not been demonstrated. The term is a misnomer and its popularity unfortunate. It is not decomposed but infected food that is apt to cause acute gastro-intestinal attacks."

(6) *Special poisons*.—Ergot in rye is a type of this form.

(7) *Accidental poisons*.—Any poison may be accidentally or intentionally introduced into our food or drink.

(8) *Amount of food*.—Excessive consumption of food predisposes to obesity and possibly to certain types of degenerative diseases. Insufficient food, of course, undermines health.

(9) *Composition*.—Injury may come from an unbalanced diet, and the absence of certain essential food accessories may lead to certain deficiency diseases, such as beriberi, scurvy, rickets, and pellagra. A lack of iodine in our food or water may cause goiter. An excess of fat may cause acidosis; an excess of protein, putrefactive changes; and an excess of carbohydrate, fermentation.

(10) *Digestion and metabolism*.—



Keystone View Company.

That the slogan of the inspector is "Safeguard the Public" is evidenced by the condemnation in New York last year of 7,994,297 pounds of fruit as unsafe for food.



Keystone View Company.

Though the bakers begin their day's work at midnight, the food inspector is on hand to insure that the bakers are clean and healthy and that the baking operations are sanitary.

Wholesome foods may be rendered injurious from faulty digestion or metabolic disturbances, caused by too rapid eating, insufficient mastication, or eating when fatigued or overheated.

(11) *Anaphylaxis*.—It is a common experience that some of us have an idiosyncrasy to certain foods, e. g., sea food, strawberries, eggs, tomatoes, milk, oatmeal, etc.

While all the above named forms of injury which may be attributed to food are of importance, our discussion at the present time will be limited to groups 3 and 4, i. e., food infection caused by *B. enteritidis* and its congeners, and food intoxication caused by the toxin of *B. botulinus*.

It has been a common error in the past to base our classification of food poisoning with relation to the food involved; that is, we have had sausage poisoning, cheese poisoning, fish poisoning, ice cream poisoning, etc. Such a classification is manifestly improper from every standpoint, and it is obvious that the more scientific method of classification is one based on the actual cause of the trouble, regardless of the medium through which it is introduced. According to the best known modern classification, the forms of food poisoning we are now considering are due either to food infection or food intoxication. These two groups are well defined, differing in symptoms, causes and manner of production.

### Forms of Food Infection

As already stated, this is generally associated with Gaertner's bacillus or one of its congeners. It is this form

which is commonly erroneously called "ptomaine poisoning." Infected meat being the most common source of infection, it is sometimes called "meat poisoning," although milk, cheese, as well as vegetables, may carry the infection. It generally occurs in warm weather, the higher temperature encouraging the multiplication of the bacteria and increasing the opportunity for carriers like flies to spread the infection. Secondary infections rarely occur and human carriers of the infection are very infrequent.

Unfortunately, organoleptic tests will not always serve as a warning of the infection. In fact, as Rosenau says: "In the vast majority of outbreaks of food infection the food affected is not noticeably altered in either appearance, taste or smell. The prevalent idea that poisonous food must be 'tainted' still persists, although long exploded. Bacilli belonging to the Gaertner bacillus group cannot be detected in food or water, any more than typhoid bacilli, dysentery bacilli, or cholera vibrios can be detected with our unaided senses." In some outbreaks there have been noted objectionable qualities in the food, but these are exceptional, not usual.

This form of poisoning occurs most frequently with meat foods. In 112 British outbreaks, 90 were due to flesh food, chiefly brawn, meat pies, pork, ham, and beef. Pork or beef accounted for 68 per cent of British and 61 per cent of Continental outbreaks. Few outbreaks have been attributed to fish and almost none to mutton or lamb. The poisoning most commonly appears in prepared meat



Keystone View Company.

The small, blue stamp of the meat inspector signifies that the meat is fresh and affected by no impurities. Safe handling is insisted upon in the interest of a wholesome food supply.

foods—brawn, meat pies, sausage, chopped meat. Excessive handling of the food, and long standing at warm temperatures increase the danger of the infection and encourage bacterial multiplication.

### Principal Sources of Infection

The infection of the meat of food animals may be antemortem or post-mortem. Cattle suffering from puerperal fever, uterine inflammation, septicemia, septic pyemia, or diarrhea are liable to furnish meat containing bacilli of the type under discussion. The importance of Governmental inspection of meat is therefore apparent, and the danger from uninspected meat or emergency slaughter is equally clear. Infection may likewise occur after slaughter in the meat of healthy animals from the butcher's hands or from implements used on contaminated carcasses, or by fecal contamination, or by human carriers. The last named danger is very remote. In Rosenau's laboratory not a single carrier of bacilli of the Gaertner type was found in more than four thousand specimens of human feces from healthy individuals. Infection from fecal bacteria also is most unlikely. Rats and mice, however, are frequently carriers of these bacilli and the chance of infection from such a source is by no means a remote one.

It must be kept in mind that acute gastro-intestinal disturbances are not necessarily due to harmful foods. Physicians have often fallen into this error in making their diagnoses. The

symptoms of such disturbances may be due to indigestion, indiscreet diet, excessive eating when fatigued, or to nervous or emotional exhaustion. Certain organic diseases of the heart or kidneys show similar symptoms, as do certain acute infectious diseases in children. Rosenau has also shown that alleged "ptomaine poisoning" has been mistaken for cerebrospinal fever, malignant tumor, anaphylaxis, and dysentery. That an alleged case of sickness is due to "ptomaine poisoning" must, therefore, be accepted with many reservations, and leading investigators at the present time even doubt its existence, as is evidenced by the following quotations:

"Ptomaine poisoning is a myth—there is no such thing. Our results at Harvard are positive and convincing" (Rosenau). "The term 'ptomaine poisoning' is clearly incorrect and its retention is unfortunate and misleading, as it leads to a faulty conception of the pathology of the condition, and, what is worse, to the neglect of proper methods of investigation and prevention" (Savage). "Ptomaine poisoning" is a refuge from etiologic uncertainty" (Jordan). "Ptomaine poisoning" is a good name to forget" (Chapin). "The term is incorrect and it should certainly not be used in any scientific publication. A ptomaine, according to Selmi's definition, is a basic product of putrefaction. This is the scientific and proper meaning of the term 'ptomaine' and it should not be applied to food poisoning" (Vaughan).

### Prevention of Food Infection

Obviously the surest means of prevention is to have our food as fresh and clean as possible. In foods, canned either in the home or the factory, it is essential that clean, fresh products be used, and that the temperature and period of processing shall be sufficient to kill all pathogenic spores. If the food is refrigerated, a temperature at or near the freezing point must be maintained; if pickled, the brine must be strong enough to prevent bacterial growth.

The main safeguard, however, with foods liable to infection, lies in cooking, which must be thorough in order that the proper heat may penetrate the food. This is of the utmost importance and is often overlooked. Bacilli of the Gaertner group are readily killed in a few minutes at 70 degrees C., but too often in cooking food this temperature is reached only in the superficial layers of the food, while the interior may be relatively cool and many degrees below the

thermal death point. For instance, joints of meat require several hours' boiling to secure an internal temperature of 80 degrees C. In one experiment a twelve pound ham was placed in cold water which was then raised to the boiling point, and it was found that when the water boiled the interior of the ham was only 25 degrees C., and even after two hours certain parts of the interior showed only 46 and 55 degrees. The interior of a rapidly roasted sausage was only 28.7 degrees C. Similar results have been found in the baking of meat pies. Sawyer found that typhoid bacilli survived in spaghetti cooked until the surface was well-browned. The importance of thorough cooking, therefore, cannot be over-emphasized; and this cooking should be recent, just before serving.

As already stated, the first step in the prevention of food infection, especially in meats, rests with the inspector who should condemn any meat from animals suffering from septic or pyemic lesions. Likewise, every pains should be taken to disinfect the hands and butchering tools to prevent the carrying of such infection to healthy carcasses. The cleanly handling exercised in the butchering must be continued throughout all the stages in the meat's progress from the slaughter house to the consumer's table, and at all times the meat must be protected against fecal contamination from flies, rats, or mice. Food should be handled as little as possible, and the health of the food handlers is of course of the greatest importance.



Keystone View Company.

Refrigeration is the object of the closest scrutiny in order to keep it constant and low enough for a wide margin of safety. This is especially important in hotels and restaurants and in the commissaries of institutions.

Foods that have been chopped or otherwise prepared are especially prone to infection, and in such cases proper refrigeration is essential, keeping in mind the fact that the Gaertner bacillus may grow and multiply at temperatures as low as 10 degrees C.

### Incidence of Food Intoxication

Poisoning from botulism has attracted special attention during the last two years because of several rather serious local outbreaks. The botulinus bacillus is found in a large variety of foods, both animal and vegetable, and the poison is generated before the food is eaten. Originally this form of poisoning was associated with sausage, hence the name from botulus (sausage). The bacillus is a saprophyte, the toxin developing under anaerobic conditions, and the poisoning is peculiar in that the central nervous system is the chief seat of the intoxication, with no fever and only rarely any acute gastro-intestinal disturbance.

Botulism is much more common in Europe than in the United States. With us it is a rare disease, but its high mortality and the distressing symptoms that accompany it have given it an unfortunate news value, and our newspapers have, therefore, given much prominence to the occasional outbreaks of the past two years, and have caused undue alarm among consumers and distrust of certain important groups of food products. According to Rosenau's statis-

tics in twenty-two years 150 people are recorded in the United States as having been made ill by this form of poisoning, with 111 deaths. Distressing as this is, it is quite insignificant when compared with the toll exacted by several of our familiar diseases, whose victims seldom excite any journalistic interest.

Botulism is peculiar to no sex, age, season or social condition. It appears also among domestic animals, forage poisoning in horses, limberneck in poultry, and possibly some forms of paralysis in various domestic animals, being attributable to it. The habitat of the bacillus in nature has not been definitely determined, but it appears to be an intestinal and soil organism associated with animal excrement. For a time it was believed that certain sections of our country were more liable to harbor this bacillus than others, but recent investigations by Dickson and Meyer have shown it to be quite widely distributed in soils throughout the whole United States.

The thermal death point of the spore has been studied by Weiss, who found that the most resistant types require five hours at 100 degrees, forty minutes at 105 degrees, fifteen minutes at 110 degrees, or six minutes at 120 degrees C. Weiss also found that young spores are more resistant than old ones, dry ones than those that are moist, and that acids, alkalis and various other chemicals greatly reduce the spore's resistance to heat. The fact that these ready means exist for destroying the power of the bacillus is the consumer's chief safeguard, and when this is better realized by the producers of food, both in the home and the factory, the danger from botulinus poisoning will be indeed remote.

### Danger in the Toxin

It is not the bacillus, but its toxin, that causes the poisoning. This toxin is a soluble, exotoxin, similar in all respects to those produced by the bacilli of tetanus or diphtheria. It is the only one of the true toxins that is poisonous when taken by the mouth. It is secreted only under anaerobic conditions, between 20 and 30 degrees C. The toxin is remarkably virulent, and there is danger in even tasting any suspicious food.

Van Ermengem showed that the toxin was destroyed by heating for thirty minutes at 80 degrees C., and this has been verified many times, demonstrating that such a procedure offered a wide margin of safety. Other investigators have shown that



Keystone View Company.

Milk inspection in New York City involves the certification of nearly eleven million gallons of ice cream annually, which, uninspected, might constitute a universal menace.

special strains were destroyed at even lower temperature acting through still shorter periods. The toxins of most strains are killed at 65 degrees C. in thirty minutes. So it is apparent that cooking offers us a special safeguard.

A true antitoxin may be obtained by injecting increasing amounts into susceptible animals, and this is both protective and curative, even when given twenty-four hours after the ingestion of the poison, but before the appearance of the characteristic symptoms.

### Sources of Botulism

At first it was thought that *B. botulinus* would grow only in sausage or other meat products, but animal protein is no longer believed to be essential for its development. In Europe the foods involved have been mainly meats, such as sausage and ham, but in this country it has been found in ripe olives, spinach, string beans, cottage cheese, corn, asparagus, salad and beets. It has also been attributed to turkey, beef, chicken, and fish.

Frequently in cases of botulism suspicion has been directed against the wrong food. The period of incubation is usually from eighteen to thirty-six hours, and, naturally, several meals may have been consumed between the time of eating the toxic food and the appearance of the initial symptoms of nausea and vomiting. Botulism has occurred most frequently, not in fresh foods, but in those that have undergone some treat-



Keystone View Company.

Two million quarts of milk a day are reasonably safeguarded, or sickness, spread through its contamination would be universal. Bad methods of handling on the part of individuals can negate even the most careful public inspection carried out as a matter of routine.

ment, such as pickling, smoking, or canning, or which have been prepared in the home, institution, or restaurant and kept some time before consumption, without proper safeguards. Home packed foods have been responsible for a large proportion of the cases thus far reported, and this is not surprising, for the foods so packed are not always perfectly fresh when put up, the temperature of the processing is often insufficient to kill the botulinus spores, and in general the amateur packer lacks the skill and experience of the commercial canner. The above statement is not meant to imply wholesale condemnation of home packed foods, but there is no question that commercially canned foods are far less liable to botulinus contamination.

As in the case of food infection, no certain reliance can be placed upon odor, taste, or appearance to reveal the presence of the botulinus toxin. In a number of cases of this form of poisoning there has been evidence of taint as revealed either by the food's odor or unpleasant taste; but, unfortunately, this is not always true. The safest procedure is to avoid eating abnormally soft, mushy foods, which show gas or other evidence of putrefaction.

### Prevention of Botulism

Botulism is prevented chiefly by greater care in the handling and preparation of nitrogenous foods. There is no danger of such poisoning in fresh foods, for in them the anaerobic conditions necessary for the development of the toxin do not exist. As stated before, the danger of botulism appears to be chiefly in home canned foods, which emphasizes the necessity for the adoption of safe methods by home canners, especially the employment of sufficient heat to kill the spores, and the avoidance of all raw materials that is not fresh and clean. The same necessity of course rests with the commercial canner, but generally because of his greater experience and more scientific equipment, the conditions favorable to the development of the bacillus are less liable to occur in the factory than in the home.

The botulinus toxin is destroyed in ten minutes at 80 degrees C., and cooking, therefore, is a safeguard, but this must meet the above-named conditions of temperature and time. Home canned, and also commercially canned, foods, except milk and acid foods, should be cooked again before serving. The toxin may reform in cooked food that has been allowed to

stand twenty-four hours at room temperature, so proper refrigeration of such food is essential in preventing the possibility of botulism.

Attention has already been directed to the fact that organoleptic tests are by no means an infallible guide in detecting food liable to produce botulism. It is essential, therefore, that consumers and producers should alike be educated as to the importance

of the proper precautions to be taken in the preparation and cooking of food. Proper heat and proper cold are sure preventives, but there must be no uncertainty as to the maintenance of these proper temperatures for a sufficient time either to prevent the development of the toxin, or to effect its destruction. Wider knowledge and better practices in food sanitation are the best safeguards.

## Combats Venereal Disease

BY C.-E. A. WINSLOW, M.D., GENERAL MEDICAL DIRECTOR, THE LEAGUE OF RED CROSS SOCIETIES, GENEVA, SWITZERLAND

THE second of the regional conferences on venereal disease, arranged under the auspices of the League of Red Cross Societies—the first having been held at Washington last fall—took place at Copenhagen, May 20-25. It was held on the invitation of the Danish Red Cross and included the seven North European countries, Denmark, England, Finland, Germany, Holland, Norway, and Sweden, represented by such eminent men as Rasch, Ehlers and Madsen of Copenhagen, Harrison and Kay Menzies of London, Galewsky of Dresden, Gron of Christiania, and Marcus and Ribbing of Stockholm.

The nations participating in this conference are among the most advanced in the world in their venereal disease programs. From the social side, England and Holland have had nothing like official toleration of prostitution for a hundred years. Norway abolished so-called "regulation" of prostitutes in 1888, Denmark in 1906, and Sweden in 1918; while Germany and Finland are planning similar action in the immediate future. Thus, all of these countries will shortly be on a "abolitionist" basis; and the Conference was unanimously of the opinion that the practice of regulation is medically useless and may prove positively harmful as tending to give official sanction to a vicious traffic.

### Progress in Treatment

It is in connection with the medical control and treatment of venereal disease that the countries of northern Europe have made most notable progress. There are sharp lines of differentiation, however, between their policies, differences due chiefly to national psychology rather than to any divergence in principle. Thus the notification of venereal diseases (by number) is required by law in Denmark, Norway, and Sweden, but not

in England, Germany, and Holland. Denmark and Sweden have laws—like those of certain of our American States, but much better enforced—which require compulsory treatment for all known cases of venereal disease; England, Germany, and Norway have no compulsory treatment, but recognize the duty of the state to provide free treatment for all who will avail themselves of it; Holland does not agree to the principle of universal free treatment, although ample facilities are furnished to those who cannot afford the cost. The Conference was absolutely in accord in holding the provision of free dispensary treatment for all who would not otherwise obtain it to be one of the most essential factors in the campaign against venereal disease.

The extent to which dispensary treatment is actually secured may, of course, be as great under a voluntary as under a compulsory treatment plan. In England a very extensive system of free voluntary treatment has been provided which included more than one hundred thousand new patients in 1920. The clinics in the large cities are now kept open all day long. In Stockholm, with a compulsory law, nearly twelve thousand patients received treatment in 1912, about thirty new patients per one thousand population. There were eleven visits per patient per year in Stockholm, and nearly fifteen visits per patient per year in England and Wales, both remarkably good figures.

### Denmark and Sweden Lead

Denmark and Sweden have on the whole the most complete medical programs for the treatment of venereal disease which are to be found in Europe. Denmark recognized the principle of universal free treatment as early as 1790, and Sweden introduced the system of anonymous notification in 1817. In both countries all cases

must be reported by number and must continue under treatment until cured, failure to report to the physician in charge at the specified time—unless the original physician is notified of transfer to another physician—being followed by a report to the health authorities of the name of the delinquent. Denmark has a particularly admirable card catalogue of all reported cases based on date of birth, initial of family name—which must be included on the report—sex, date of original diagnosis, and name of the physician or institution giving the first treatment. Reports of the Wassermann test are also recorded on these cards, and since over forty-three thousand Wassermann tests were made at the Royal Institute of Serology in 1920, the results are of sufficient extent to prove of both scientific and administrative value. Medical facilities are free for all venereal cases, and are generously provided. Copenhagen has four hundred hospital beds for such cases, or one bed per two thousand population, about 3,500 cases per year receiving treatment. There are no quacks in Copenhagen; and it is believed that nine-tenths of all cases are treated by qualified specialists. Severe penalties are provided in both Denmark and Sweden for the conscious exposure of another person to venereal infection. A particularly interesting phase of the Swedish system is the search for sources of infection. Each patient consulting a physician is requested, but not compelled, to give the name and address of the person by whom he or she was presumably infected and when this can be done the infecting person is sought out, examined and brought under treatment.

From the standpoint of popular education, which was considered by the Conference as a fundamental essential in combating venereal disease, the experience of England and Germany is most extensive. Local health authorities in England are required by the Ministry of Health to provide for such education, which is largely carried out in cooperation with the National Council for Combating Venereal Diseases, a voluntary organization receiving large grants of money from the Government. This Council spent about \$25,000 on newspaper advertising alone in the year April, 1920, to March, 1921, and received nearly thirty-five thousand letters of inquiry as a direct result. The German Society for Combating Venereal Diseases has also carried on an admirable plan of propaganda by the use of lectures, films, and leaflets.

So far as specific training in Sex hygiene in elementary schools is concerned, opinion in England is adverse, but in Sweden, where education does not cease at fourteen, as has generally been the case in England, but continues to the age of sixteen, a Royal Commission appointed for the purpose has recently (March, 1921) presented a report recommending an extensive and detailed system of sex education. It suggests a short compulsory course for all pupils at about the age of fifteen and a second more advanced course for the students who continue in secondary schools till eighteen or nineteen. The training of all teachers in sex hygiene was insisted upon by all the members of the Conference, whether formal instruction of pupils be a part of the school curriculum or not.

The Copenhagen Conference marked a definite step forward on the road toward a constructive world program for combating venereal disease; and it is of interest to note that the statistics of reported cases for Denmark and Sweden and the statistics of treated cases for England all indicate a decrease of venereal disease since 1919, whether as a result of the passing of war conditions or as a result of the public health campaign, it is yet too soon to say.

### Child Hygiene Extended

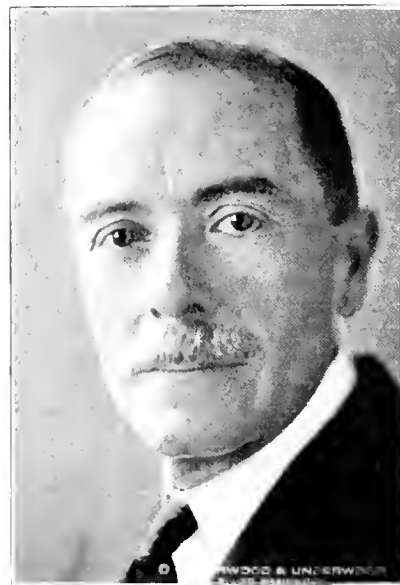
It has been announced by the New York City Department of Health that through the combined efforts of the Bureau of Child Hygiene, the Department of Education, the Red Cross, and the Civic Club, an examination of the pre-school children who are to be registered in school next September was begun on May 31 in every school in Manhattan. The work will continue until the end of the present school year and it is expected that about 1,000 children will be examined. The physical defects will be corrected so far as possible before the children enter school. A study will be made of the effect of the removal of these defects upon the mental status of the children, the latter examinations being conducted by the Department of Education.

### Industrial Medicine for Germany

The Prussian Government has appointed a chief industrial physician to supervise matters of industrial hygiene, the appointee being Dr. Ludwig Teleky of Vienna, a widely known expert on the subject.

### Dr. Livingston Farrand Goes to Cornell

The achievements of Dr. Livingston Farrand are known to thousands, eminently fitting him to fill his new capacity as president of Cornell University. A member of the 1888 class of Princeton, he took his degree as Doctor of Medicine from the College of Physicians and Surgeons at Columbia in 1891, after which he had a year of study in Cambridge and one in Berlin, when he returned to teach at Columbia, where he was in the Department of Psychology until 1903, and thereafter held the Chair of Anthropology until 1914. During this period he accompanied two expeditions of the American Museum of Natural History, under Dr. Boaz, to study the



Indians on the coast of Washington and British Columbia.

His first big piece of executive organization he accomplished as executive secretary of the National Association for the Prevention of Tuberculosis and was a marked example of his gift for making opposing factions pull together. As president of the University of Colorado in 1914 he reorganized the university's medical school, another demonstration of marked executive ability.

His executive work with the American Red Cross is familiar to everyone and exemplifies his faculty for leadership. A physician by training, his medical knowledge has been used only in research and as a basis for medical executive work. His experience in organization, and his work in France, and his knowledge of diplomacy will serve him excellently in his new post.



# Light Much Neglected in Efficiency Promotion

## Psychology as Well as Physiology Enters into Successful Lighting

By S. E. DOANE, CHIEF ENGINEER, NATIONAL LAMP WORKS OF GENERAL ELECTRIC COMPANY, CLEVELAND, OHIO

**B**ECAUSE the eye is so perfectly designed that it is automatic in its action, and because it is so carefully built that it withstands abuse day after day without complaint, we find, as we might expect, that the conditions under which it is required to work receive relatively little attention.

It is true that modern factory and office buildings are planned with a view to utilizing daylight to good advantage, but the mechanic who rents a barn as the first step toward a garage or service station of his own contents himself with windows as he finds them. It is true that lighting is now receiving attention in the public schools, but the child will do studying at home under artificial lighting of a very indifferent quality.

### Wide Range of Power

The variations in lighting range from several thousand "foot-candles" outdoors on a sunny day to the fraction of a "foot-candle" which may obtain in the central portion of an industrial interior on a cloudy day. Certain it is that if the eye had to be adjusted consciously as we would adjust a camera for these wide variations, we would give careful consideration to providing illumination of a character which would enable the eye to devote more of its energies to visualizing and less to see-sawing back and forth in constantly varying adjustment.

Washington used candles. Lincoln studied by the flickering flames of a fireplace. Most of us have used the kerosene lamp. Electric lighting is relatively new. It was in 1879 that the first incandescent lamps were placed on the market.

For the next score of years, manufacturers devoted themselves almost entirely to improving the lamp itself.

Then the idea took root that lamps were merely a means to illumination.

The illuminating engineers, who were born to meet the need, dug into the fundamentals of lighting and laid a firm foundation upon which lighting progress could be built.

This foundation was being laid slowly, but carefully, when the rush of the war activity forced an unexpectedly strenuous trial of the the-

*If some of the attention the eye has commanded as a fine instrument of accommodation were transferred to the consideration of its limitations, many obscure causes of ill health, fatigue, and unrest would be eliminated.*

*In illuminating the work place the hygiene of the eye needs to be considered first, the adaptation of the worker second, and increased production last; but all these interests are equally served by scientific lighting.*

ories of these engineers and found them true. Thus was begun a new era in lighting.

It is because artificial light has been, in the past, regarded too lightly in the scheme of industrial efficiency that we have today what is so generally characterized as a new era in lighting in industrial and electrical circles. The past few years have witnessed no phenomenal inventions or developments of light sources. Improvements have been made, it is true, but the lamps are only more perfect editions of the copy of five years ago.

The age-old lighting idea has been changed, due in part to the impetus given it by lighting men trying to establish their theories, but due, in the main, to the outstanding records that proper lighting has made when

on its merits alone. Therefore artificial lighting has been more or less of a supplementary matter, simply an available service to be called on to help out daylight in the early morning or late evening hours. But when the war requirement called on certain industries for twenty-four hours production, it was necessary for artificial light, not to supplement but actually substitute for daylight. Illuminating engineering then became a reality.

### Safety a By-Product

Our post-war invoice of the standing of lighting showed us that the general attitude of the industrial men was changing from one extreme to the other; where before lighting cost had been a burdensome operating expense to be curtailed wherever possible, it now became a factor which paid handsome dividends in utility, production, and profits.

It is common knowledge that for the eyes to function, light must be supplied in some measure; but just how much is needed for best vision is a matter of speculation. It is also a matter of common experience that when the daylight begins to fade or on dark cloudy days we have to make more of an effort to see details which were clearly visible when there was plenty of light. It follows then that the amount of light supplied has a great deal to do with our ability to see quickly and accurately. When factory tests indicated that increased production was the direct consequence of more light, it was first thought that light had merely a stimulating effect which caused the workmen to move faster and thus to accomplish more in a given time. But as the results were further analyzed it was found that spoilage decreased and the accident rate diminished. The obvious conclusion was, then, that the light was allowing the workman to proceed with his work *unhindered* at his normal pace. In other words, it does not add another brick to the hod-carrier's load in his effort to get more done but it merely serves to remove an obstacle which has hindered his normal progress.

Let us consider the gain to the country of a general improvement of lighting conditions as indicated by sta-



Fig. 1.—Here the foot-candle meter is used to measure the illumination on the work.





Fig. 2.—As a strictly local lighting system, this might be described as good, yet the appearance of the room is dark and depressing. Reflections of the lamp filaments in the working surfaces are likewise a source of considerable annoyance to the workmen, whose comfort is always an important factor and affects their general attitude toward the shop.

tistics at present available. As far as taking the brakes off production is concerned, all tests have shown an increase in production during lighting hours, some as high as 35 per cent. As regards spoilage, it is estimated that of the \$350,000,000 wasted annually in the United States thirty million dollars is directly chargeable to poor illumination.

Recent statistics from insurance companies attribute 15 per cent of all industrial accidents directly to inadequate or improper illumination. Reduced to a dollar-and-cents basis, the equivalent loss to the industries by accidents chargeable to poor lighting amounts to three hundred thousand dollars. This is a sum in excess of our yearly industrial lighting bill, and hence we can see that one result alone of the misuse and inadequate use of our lighting facilities in industry costs more than the light itself!

A number of states have taken cognizance of lighting in connection with the safety movement and have adopted codes designed to regulate industrial lighting.

From this same standpoint, too, the industrial physician is concerned. If an effort is being made to reduce the accident rate or if the contributing causes are being sought, it would be well to inspect the lighting. As we have already stated, the eye is apparently capable of withstanding a great deal of abuse and for this reason bad conditions are sometimes not discovered until an accident occurs; or are not readily apparent on slight inspection, but manifest themselves after a time.

One lighting expert found on such investigation that in one machine shop there was a drill press known to have a "hoodoo." Anyone who worked at

this drill press was certain to have an accident before very long. Men were even known to quit the plant rather than attempt to work on this machine.

The lighting expert discovered that these accidents had been caused by a reflection due to the peculiar way in which this drill press happened to be lighted. The operator was continuously handicapped by this little reflection flashing back and forth in his eyes. It was slight, to be sure, but on account of the regularity with which it occurred, the operator became almost hypnotized.

At least, it caused the accidents, for

as soon as the lighting had been changed, accidents ceased.

### Cause May Be Obscure

It is not always easy to discover an obscure cause like this; however, if any machine seems to be responsible for a large number of accidents, the one thing which should be examined first, is the lighting.

Another instance of somewhat similar nature was recently encountered in a machine shop of a large industrial concern in northern Ohio. It had been observed for some time that one row of four lathes was being shunned by the machinists whenever possible, the men oftentimes carrying their work to lathes located at the far end of the shop when occasion compelled the use of a lathe. The continued idleness of these four lathes finally caused the foreman to investigate.

The workmen could give no valid reason for not using these lathes, simply saying that they "did not like to work on them." After thoroughly inspecting the working parts of the machines and finding nothing wrong mechanically, the foreman casually glanced out of the nearest window and in so doing, discovered the cause of the trouble. In front of each of the four lathes was a large window which allowed a flood of daylight to shine directly into the eyes of the operator. The glare resulting from this condition had produced an unpleasant physical and mental reaction



Fig. 3.—The same room shown in Figure 2, after modern lighting was installed. The "forest of belting" does not prevent an adequate supply of properly diffused light from reaching the work from a general overhead system. The contrasted lighting conditions reflect the truth of statements of more contented workmen, increased production and decreased accidents under good lighting.

on the men, and despite the fact that the machines were in perfect mechanical condition, the men "did not like to work at them."

The situation analyzed, an effective daytime remedy which overcame all previous prejudice consisted simply of reversing the position of the lathes so that the operators worked with their backs to the window.

### More than Light in Lighting

These actual happenings indicate that there is something more to be considered in lighting than the amount of light. In speaking of the benefits of proper illumination, it may have seemed that the amount of light was the thing of first importance in good lighting. As a matter of fact, the two examples just mentioned were not occasioned by lack of light but by defective or improper lighting. Glare and reflected glare, or, in popular words, "light which shines in the eyes" present not only a negative condition for vision but a positive menace as well which counteracts the usual effect of enough light. In milder forms, glare may not actually cause visual defects but in all prob-

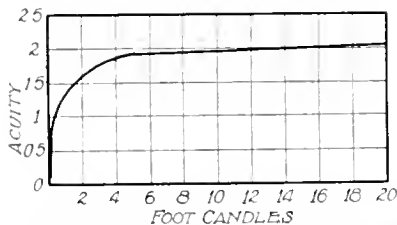


Fig. 4.—\*Showing the effect of increase of intensity of light on acuity, acuity plotted against foot-candles of light to the surface of test objects.

ability it will produce a mental dissatisfaction which is difficult to account for and for which the true cause may be least suspected.

There are then three important factors which go to make up good illumination, namely: (1) Amount of light, (2) quality of light, and (3) direction of light.

I have spoken in general terms concerning amount of light but unfor-

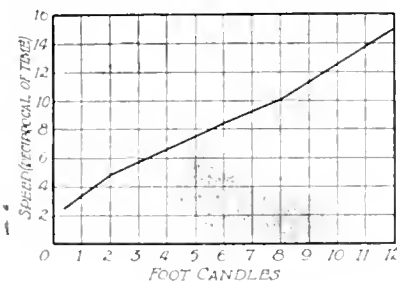


Fig. 5.—\*Showing the effect of increase of intensity of light on speed of discrimination for eyes with normal refraction.



Fig. 8.—The glaring local light shown in this picture is a menace to safety and vision. It is one of the evils which state lighting codes are aiming to destroy.

tunately that is a term of which the average man has little conception. Speak of "amount of light" in a room to the ordinary layman and his

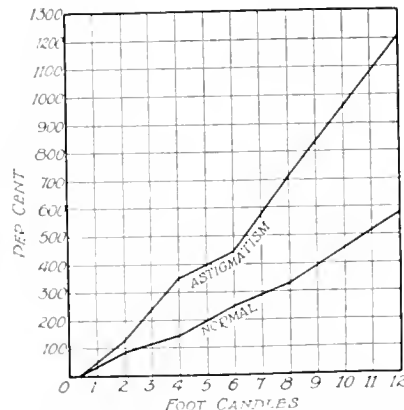


Fig. 6.—\*Showing the effect of increase of intensity of light on speed of discrimination for eyes with normal refraction and same eyes made slightly astigmatic.

thoughts and eyes instinctively turn to the lamps to see if they are bright and glaring; if so, naturally there is plenty of light. But as a matter of fact, looking at the lighted lamp to

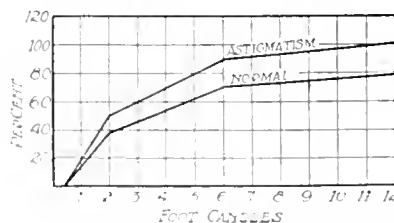


Fig. 7.—\*Showing the effect of increase of intensity of light on speed of adjustment of eye for clear seeing at different distances for eyes with normal refraction and same eyes made slightly astigmatic.

determine the amount of light in a room is like putting your hand on the stove to determine therefrom the temperature of the room. Carrying the analogy further, we now measure illumination in "foot-candles" with a foot-candle meter in the same way that we measure the temperature in a room in degrees with a thermometer (Fig. 1). When we say we have five, ten, or twenty foot-candles of illumination, we mean that we have a certain quantity of light on the working plane which is quite independent of the size of lamps used to generate or "manufacture" this necessary quantity of light. The Figures 4 to 7 show the relation of "amount of illumination" to visual results.

### Must Diffuse the Light

We have the evils of glare and reflected glare which are ever present in some degree where sources are within the field of vision. All lamps should be shielded by diffusing glassware or other diffusing medium so that the brightness of the unit either in itself or in contrast to its background will not prove annoying. Color quality, direction of light, uniformity of illumination, and other considerations no less important than those which have been briefly touched upon, are all factors which must be given attention in a properly designed lighting system.

I wish to take this opportunity to direct the reader's attention to the work of the Illuminating Engineering

\*Ferree and Rand: Transactions Illuminating Engineering Society, 1920.

Society, which is a scientific organization free from commercial influences, devoted to the accumulation and dissemination of information on lighting. This Society has been very active in providing the foundation of facts upon which all the state lighting codes have been built. It has co-

operated with many other national societies and federal bodies in matters pertaining to lighting. It has done much to further improvements in school lighting believing that the protection of our children's eyesight is a responsibility which cannot be shirked. The *Transactions of the Illuminating*

Engineering Society are full of facts on these and many other phases of lighting which should receive the attention of those responsible for the health of the individual, the group, or the public. Economy as well as the interests of good health calls for the universal consideration of these matters.

## Research of American Institute of Baking

### Laboratory Service to the Baker Means Better Nutrition at Less Cost

BY H. E. BARNARD, PH.D., DIRECTOR, MINNEAPOLIS, MINN.

**I**N MORE ways than one the baker is an important servant of mankind. His product is the most important food of the white race. It is consumed in greater quantity and provides nutriment more cheaply than any other staple. It is on every table at every meal and yet, until the stress of war drove deep into the hearts of our people the fact that wheat was a munition as essential as shells or explosives, its real value was little appreciated. We ate bread as a matter of course, never thinking of its production as a basic and vital industry. The old couplet referring to the butcher, the baker, the candlestick maker, still serves to link essential trades together. And yet the butcher, who wastefully dressed an occasional beeve, has given way to the packer who handles the live stock from pastures a thousand miles apart so scientifically that waste is eliminated; the candlestick maker put away his moulds when kerosene filled the family lamp; the baker is the only figure in the trio who survives. But he is ambitious, too. His little, dark, one oven shop with its wooden troughs and handmade doughs is being converted into sunlit, sanitary laboratories where flour is handled with all the deference its amazing values as a chemical substance demands and with all the scientific skill necessary to its manufacture into perfect bread.

#### Baker Has His Vision

During the war the baking industry operated under license from the United States Food Administration. It used the formulas set for it. It made the loaves it was permitted to make. It went through travails which threatened to crush it and yet, when the regulations were abolished, it came out a better informed, broader visioned, more compact industry than ever before in all history. And the

baker had a vision in his days of trouble. He saw as never before the real purpose of his shop and he has set himself to realize it. He is determined to take baking, the last of the primitive household duties, out of the home and put it in the factory, just as the weaving of cloth, the making of shoes, the washing of clothes have been lifted from the shoulders of modern womankind and transferred to the soulless machine.

But the baker knows that he cannot convince all bread eaters that his product equals and even surpasses the quality of "mother's" bread by billboard statements. Bread flavor is too subtle, and yet too fraught with childhood memories of the open oven door to be fixed by the psychological appeal of printed words and alluring pictures. It must be in the loaf if the baker ever succeeds in his determination to make home baking a lost art.

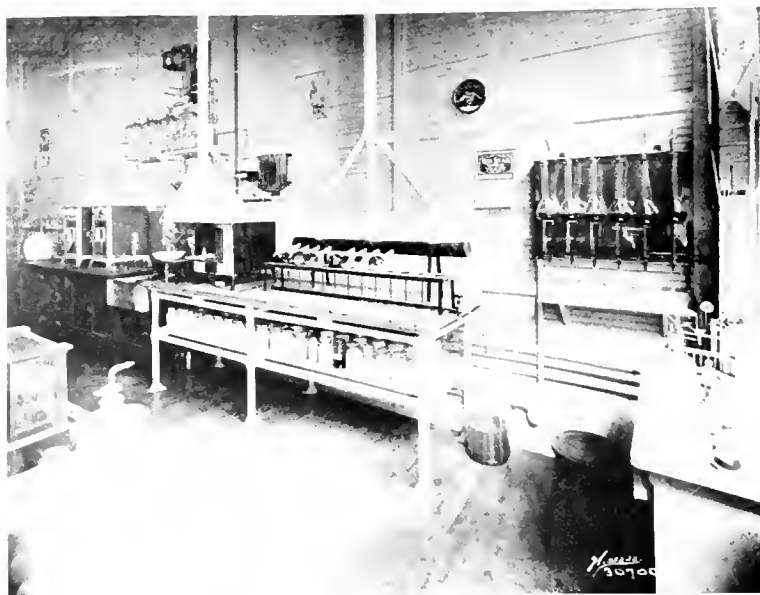
The American Association of the

Baking Industry is the group of men who worked so successfully with Herbert Hoover in the conservation of flour for shipment over seas. These bakers then learned the need of replacing the "rule of thumb" practices of pioneer industry by production methods based on definite knowledge of the chemical and biological processes that enter into the baking of the loaf. And so in 1919 they put their ambition for a greater bread industry into the form of a permanent endowment fund and founded the American Institute of Baking.

The Institute, located at Minneapolis, furnishes the opportunity for the study of the baker's problems and troubles in well equipped research and baking laboratories and adapts the results of scientific investigation to practical use in the shop. While its fundamental purpose is to place the baking industry on a scientific basis, the Institute furnishes the in-



Laboratory methods are as precise for the baking industry, and equipment as minutely adapted to its purposes as in other fields of research.



All materials are tested for purity and for exact fitness for specific use.

formation necessary to improved bakery practice through its Technical and Service Department and through a library service which reviews the literature of the baking industry and adapts it for publication either in special bulletins or through the trade papers. The scope of the work is well set out in an early prospectus which is here quoted in part as follows:

The Institute encourages the discovery of and investigates and makes known to its members the nature and merits of new inventions and improvements in processes and materials. It cooperates in the development of standard methods of analyses and tests and in establishing standard specifications for baking materials and bakery products.

It obtains data on the character of the wheats from the different producing sections of the country, as soon as threshing begins, and advises the baking industry how the different flours from these wheats can be blended and used in making the ideal loaf.

It studies the different types of bread and is developing a standard system of scoring each type and in general recommends the most satisfactory methods of handling raw materials and mechanical devices in producing these breads.

The Institute encourages and improves the education of persons engaged or who intend to engage in the production of bakery products, its laboratories functioning, in some instances, as a sort of post-graduate school.

The Institute cooperates with other organizations in the solution of problems of general interest, such as bakery sanitation, the health of workers, the nutritive value of bread, the adoption of suitable dietaries by workers in the several fields of industry.

The work of the Research Department of the American Institute of Baking is the study and investigation of those chemical, physical and biological problems which underlie the art and science of bread making and the interpretation and application of the results of such studies to the needs and advancement of the baking industry. These problems are numerous and complex and the selection of any one of them will lead to many unknown investigations the nature and value of which cannot be predicted. Some of these subsidiary problems may be of practical value and others may have for the present but the interest of a problem in pure science. Some of the major projects which are being studied are as follows:

(1) Moisture retention in bread, and the prevention of staleness.

(2) The study of sweetening agents, malt syrups and other cheap sugars.

(3) Shortening agents and their effect on fermentation.

(4) The activation of fermentation, so that the time consumed in the usual processes may be shortened.

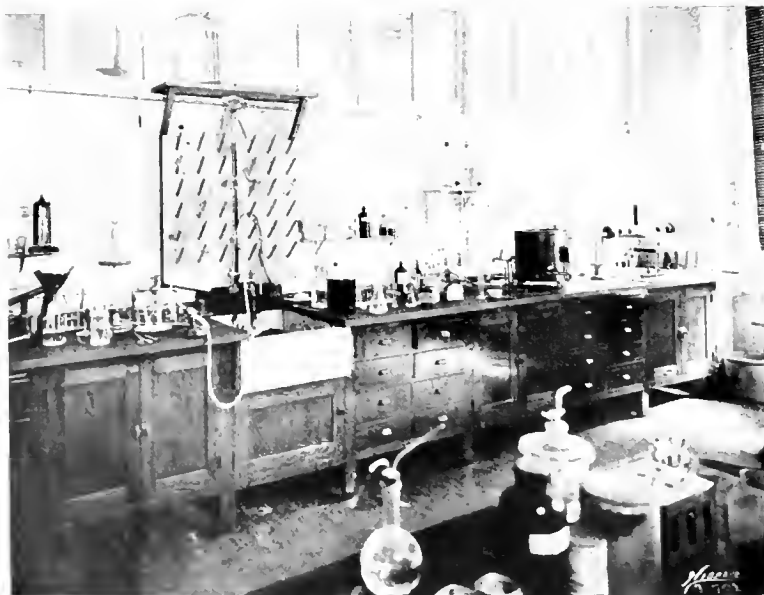
(5) The development of practical control tests for bakeries lacking laboratory facilities.

(6) The study of standard and uniform methods of analysis for flours and other baking materials.

These are but a few of the problems which seem to command immediate interest. Others that may be studied are the question of flavor, yeasts and yeast foods, the relation between physiochemical properties of flours and their baking qualities, and the investigation of new and improved methods of analysis of baking materials.

### Bulletins Are Issued.

In the year since the Institute began its work a number of bulletins have been published by its Research Department. One bulletin deals with the control of rope, a bacterial infection which causes the baker much loss and trouble in the summer months. Another is a compilation of all the laws and regulations which the Federal Government and the states have set up to regulate the composition of the raw materials used by the baker—the flour, sugars, condensed milks, and shortenings which make up his formulas. A third bulletin details the methods of analysis used in examining these materials and points out the need for better methods. Indeed, in some ways the science of baking



The American Institute of Baking has for the first time made the necessary correlation between the physiochemical properties of the constituents of breads and the finished products. All frauds and fraudulent materials are exposed by unbiased scientific method.

is outstripping the chemists in the allied industries.

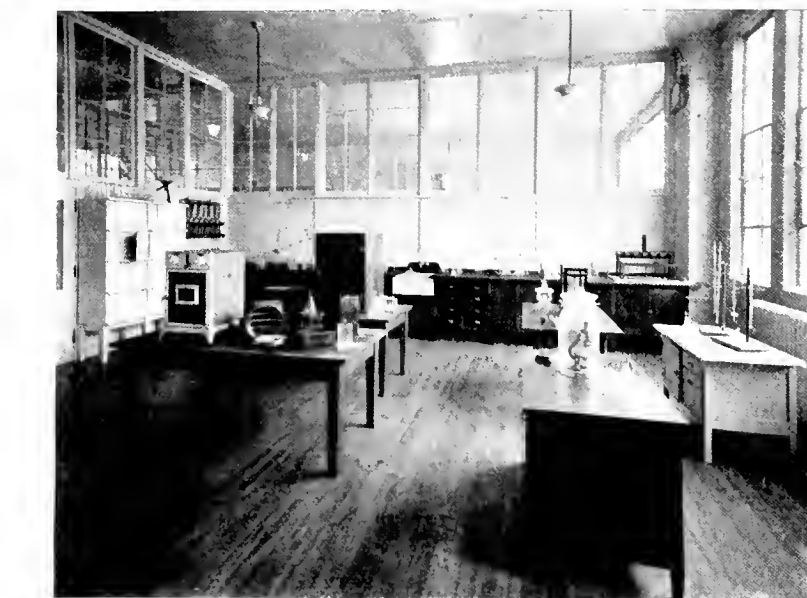
The primary function of the Technical and Service Department is the solution of problems which do not require the extended investigations and large amount of new work which characterize the activities of the Research Department.

### Technical Service Helpful

While the technical facilities of the Institute are used largely to supplement and assist in problems of pure research, a service is being built up which offers the baker a rapid solution of momentary difficulties of any nature and supplies information on technical or chemical questions.

With these purposes in view, this department has been equipped along three lines so that an excellent chemical laboratory is available for the purely chemical work; a baking laboratory which permits making bread by almost any method of procedure, and an engineering office is maintained where the problems dealing with building construction, power, heating, ventilation, wrapping, etc., are given attention.

An incidental function of this department is the examination of all specific products and materials offered the baking trade, especially where unusual qualities are claimed. A watchful eye is kept for fraud, and such frauds are exposed without bias. For the purpose of showing the character of the services which are rendered by the Technical and Service Department, a number of pertinent problems are listed below:



All data collected, and all observations made are brought together and made available everywhere through an efficiently administered information service.

Consultation, advice and critical examination on chemical, technical or engineering subjects suggested or presented by members of the Association.

Laboratory examination of the stocks of flour and a standardization of specifications for the different characteristic grades produced from each wheat crop.

Baking characteristics of each of the grades established above, and bulletins giving recommendations for the use of each class of flour, including advice in anticipation of questions of blending which may arise where the supply consists of two or more types of flour.

Location of abnormal stocks of flour in the country and, as far as it is possible to give it, advice as to how to use any unusual quality so found or to counteract defects discovered.

Examination of all shortening materials on the market.

Examination of yeast foods and comparative bakes with the same, using various types of flour for each food.

Examination of milk products, the publication of chemical data and the results of comparative baking tests.

Study of the different types of bread, classification of this bread by type with the development of a score sheet for each type; bulletins giving types of bread demanded in different parts of the country and a score system for each. The method of producing a perfect loaf of each type, with recommendations as to the raw material, method of production and the use of mechanical devices.

Suggestions for making all tests required in the control of a bakery.

Bulletins on fuels, bakery lighting and ventilation, temperature and humidity control, etc.

Investigation of commercial lubricants, and bulletins giving specifications of proper lubricants for different standard bakery machinery bearings.

### Bibliography of Breads

The literature of bread, yeasts, ferments, and indeed of the entire cereal and baking industry, is meager and not readily available. The Institute, realizing the value of having at hand as a part of its working equipment complete data on the subjects with



The scientific study of an industry evolves better objectives, better machines, better control, and, in the case of the baker, a better loaf



which it is concerned, is establishing a library to be known as the Library of the American Institute of Baking. The library will be used as a repository for all the results obtained in the laboratories and will supply the data and facilities required by the Information Service in handling the following projects:

(1) Maintenance of a complete record of available data on bread, so arranged that desired information can be immediately located.

(2) Answers to inquiries, provided the information is available in the literature or obtainable in the laboratories.

(3) The publication of abstracts of technical information in the baking field.

(4) Copy or translation of technical articles in foreign languages when requested by members.

(5) Analysis and record of results obtained through research.

(6) Service in editing material for publication or for circulation to the members.

(7) Preparation of bibliographies covering the subjects under investigation, or of special interest to the members.

It is obviously impossible to cover the broad field of the science of bread making in a single laboratory. Fortunately, the National Research Council is coordinating the research activities of the scientific world. Through the Council an Advisory Board has been organized for the purpose of correlating the work of their own laboratories with that of the Institute. The members who are on this board are leaders in their several fields, as the list will show:

Dr. Samuel C. Prescott, professor of industrial microbiology, Massachusetts Institute of Technology, Cambridge Mass.

Dr. Wilder D. Bancroft, professor of physical chemistry, Cornell University, Ithaca, N. Y.; chairman, Division of Chemistry and Chemical Technology, National Research Council.

Dr. C. E. Mendenhall, professor of physics, University of Wisconsin, Madison, Wis.; chairman, Division of Physical Science, National Research Council.

Dr. E. V. McCollum, professor of biological chemistry, School of Public Health and Hygiene, Johns Hopkins University, Baltimore, Md.

Dr. L. B. Mendel, professor of physiological chemistry, Yale University, New Haven, Conn.; member of Inter-Allied Scientific Food Commission.

Dr. John R. Murlin, director of Department of Vital Economics, University of Rochester, Rochester, N. Y.; chairman, Committee on Food and Nutrition, National Research Council; late director of the Division of Food

and Nutrition, Medical Department of the United States Army.

Dr. Alonzo E. Taylor, professor of biological chemistry, University of Pennsylvania, Philadelphia, Pa.; scientific adviser to United States Food Administrator.

Dr. G. H. A. Clowes, research chemist, Eli Lilly & Co., Indianapolis, Ind.

Dr. L. J. Henderson, professor of biological chemistry, Harvard University, Cambridge, Mass.

This Board is already functioning with our staff and several problems of scientific and practical interest are in the hands of the members of the Board. No greater assurance of the value of the Institute can be given than the knowledge that such men as Henderson, Bancroft, Prescott, Mendenhall and Clowes are, with us, hunting for the answers to our problems in preventing staling, stimulating enzymic action, controlling fermentation, strengthening glutes and perfecting methods for determining acidity. No brighter promise of a better nourished people can be given than the fact that the leaders in the study of nutrition, Mendel, McCollum, Murlin and Taylor, are bringing to our aid all the help that their researches with proteins, fats, the growth-promoting substances, the antiscorbutic principles, and the economies of an assured food supply can give them.

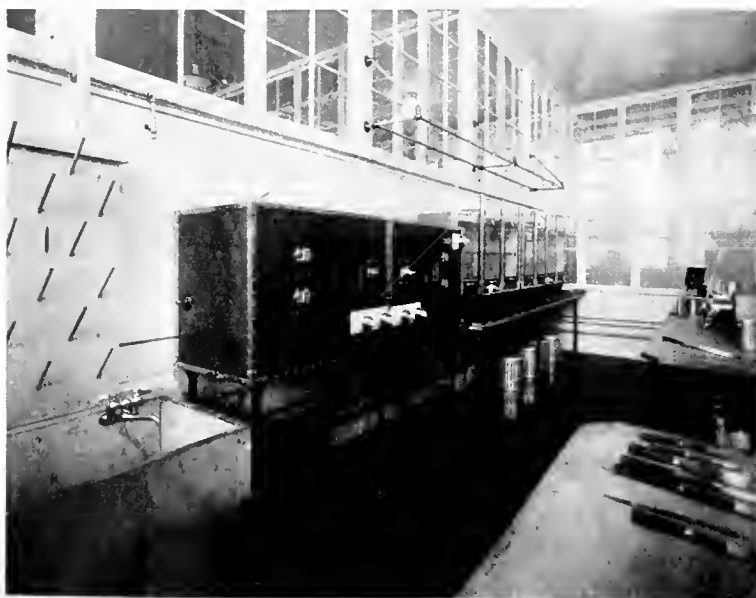
A few years ago all bread not made at home came from the retail shop. Today the business of the retail baker is chiefly the making of cakes and pastries and between 40 and 50 per cent of all bread consumed is made in the great bakeries and reaches the consumer through the grocer. This grocer may be around the corner from

the bakery or he may have his shop in some little prairie town three hundred miles away. Bread is no longer a perishable article, fit for eating only when fresh from the oven. Modern methods of baking, coupled with the use of a sanitary and moisture holding bread wrapper has so lengthened the life of the loaf that it reaches the consumer's table in perfect condition three days after baking and hundreds of miles away.

### Better than Home Made.

But it is not enough that 50 per cent of the bread supply is baked in the shop. The baker has confidence in his ability to make a better loaf of bread than the housewife. He has a wide choice of materials. He can buy better flour than the housewife, whose only knowledge of flour character is that indicated by a brand. He has better utensils and machines for mixing and fermenting his doughs. His rooms are kept under exact temperature and humidity control. His ovens are uniform in temperature and bake more evenly than the simple oven of the kitchen stove. His product is uniform in character. It is a better loaf than his only competitor's, the housewife who still observes baking day.

And baker's bread is not only being produced in larger volume every month, but it is by its cheapness and excellence steadily increasing the carbohydrate intake of the people, and this is greatly to be desired. Dr. Alonzo E. Taylor has frequently called attention to the necessity of revising the dietary in the interest of



The ovens are uniform in temperature, the product more uniform under scientifically controlled conditions.



better nutrition at less cost. He points out that the American consumption of bread, as compared with that of the English, French, and Italian, is decidedly lower and he says that our bread intake can and should be increased from its present 35 to 40 per cent of our food consumption to 60 per cent.

### Science Improves Product

The American Institute of Baking is supplying the baking industry with the scientific facts which make this high set ideal possible. If bread is better in taste, higher in nutritive value, and cheaper in cost it will be eaten in larger quantities. And it is the purpose of the Institute to teach the baker how to make better tasting, more nutritious, and cheaper bread. It is operating today that it may serve the baker and through him the consumer. It has brought the scien-

tist from his laboratory at the university and placed him in the practical laboratory of the baker. It is teaching the baker that the chemistry of flour, sugars, and shortenings, the biology of yeasts and ferments, the physics of glutens, humidities, and temperatures are none the less true science when applied in the manufacture of bread instead of in the solution of some abstract problem. Indeed, it is arousing in the scientist the conviction that no field of study is as full of fruitful problems as that of the bakeshop, and no opportunity for service so great as that offered in the production of a better loaf of bread through which to nourish mankind. It replaces old methods of prolonged and uncontrolled experimentation with the scientific precision which assures a uniformly high standard of product, a constant nutritional value, and vast economic gain.

## Helps Rural Home Makers

By MARTHA VAN RENSSELAER, DEPARTMENT OF HOME ECONOMICS, CORNELL UNIVERSITY, ITHACA, N. Y.

TO preach thrift is one thing, but to make it attractive and to "put it across" is another, for it deals with adults whose habits are fixed, with individual tastes and family prejudices which need to be countered, and with the universal tendency to lay the blame for personal difficulties upon some remote or external cause. Thrift may be defined as effectual behavior in the face of economic pressure. It implies the use to the utmost of all the means at hand, and that without

sacrifice of comfort, of health, or of peace of mind. It involves a clear vision of the problem and resolute and consistent measures to meet it.

How, then, can one make effective a campaign to make thrift appear attractive and possible of achievement? Certainly not as a charitable enterprise, nor even as a business adventure, though it is both humanitarian and economically sound.

The only way to make effectual a program of this kind is to demonstrate objectively its immediate ap-

plication to the difficulties of a given locality. It must in the first instance take on a community rather than an individual aspect, depending for its appeal upon the concrete evidence offered of its application to the individual problem.

The "Victory Special" is a demonstration train that was sent out primarily to throw light upon the various means of shaping the family living in rural communities of the state of New York to the high prices incident to post-war conditions. It was under the auspices of the Department of Home Economics of the New York State College of Agriculture, and experts from Cornell University conducted demonstrations and gave lectures on how to simplify housekeeping, how to keep well, how to buy the best values in food, how to conserve the surplus, how best to serve and preserve foods, how to make over old clothes, in short, how to practice economy without needless worry and sacrifice. The exhibits included home made and commercial labor-saving devices, home made garments demonstrating possibilities in the way of remodeling and renovating of clothes, convenient working arrangements for the kitchen, artistic values in home decorations, and many other things of interest to the homemaker.

The success of the enterprise everywhere has led to the continuation of the method in Home Bureau work designed to alleviate the difficulties of rural homemakers, and to emphasize the community relationships growing out of the mutual needs of isolated districts. It is significant that everywhere individual work has been followed by community organization, for



The work of the Department of Home Economics of the State College of Agriculture is carried to the isolated rural home maker by means of expert advice, demonstrations in the use of labor saving devices, and instruction in economies that do not cost in comfort or health on the part of those who practise them.



The "Victory Special" is composed of two cars, one for exhibits and the other for demonstrations. Visitors are shown how to make fireless cookers and iceless refrigerators, as well as plans for convenient kitchens, airy bedrooms, and attractive living rooms. Experts in home economics give advice on special problems.



The virtue of economy has a better appeal when attractive dishes have not because of economy sacrificed their flavor of delicacy. No small part of the housewife's difficulties being concerned with how to feed the family well and practice thrift at the same time.



The train is open all day. Two specialists from Cornell University give lectures on the use of foods and newer methods in their preparation and preservation. All questions on individual problems are answered.

nowhere does the individual problem remain isolated. The efficient home has its influence in the community. It is emulated by the less effectual groups. It demands better service of its schools, of its country stores, and it learns to apply to its public service the same criteria of effectiveness that have made for the intelligent administration of the home.

Figures are presented to prove the value of the measures which have grown out of the extension service of the Department of Home Economics. Home bureaus have been organized in half the counties of New York state. Hot lunches have been served in more than two hundred rural schools. Home-making courses have been introduced, and the same systematic care given in rural schools to malnourished children that has heretofore been employed exclusively in urban communities.

Another advantage has resulted in the creation of a larger community spirit by means of recreational activities. Library units have been established, clean-up days instituted, community centers created, sings, plays, and pageants arranged, so that the people in the rural communities reached need be isolated no longer if they seize the opportunities offered for extending their common interests.

However much of immediate improvement may be attributed to the thrift campaign *per se*, the greatest social gain is in the attitude of the community in facing their own problems, and in the achievement of that *rapprochement* which means a unified attack once their existence is recognized. The remedy for wrong social conditions lies in the hands of the people themselves and no satisfactory substitute has been found for self-analysis and self-help.

## Peking Union Medical College

The Rockefeller Foundation has announced the plans for the dedication of the new buildings of the Peking Union Medical College erected by the China Medical Board of the Rockefeller Foundation. The ceremonies will fill the week from September 15 to 22 and will include an international medical conference, to which the scientists from America and European countries as well as the Far East have been invited. At this time Dr. Henry S. Houghton will be inaugurated as director of the College.

In preparation for the meetings and conferences, the secretary of the Foundation, Mr. Edwin R. Embree, who serves as executive officer of the board of trustees of the College, sailed for China in June. During the summer various members of the Boards of Trustees will sail for Peking to be present during the meeting, including Dr. George E. Vincent, president of the Foundation, and Dr. Paul Monroe, chairman of the Board of Trustees. The following medical men have accepted invitations and will be present to take part in the international medical conference: Dr. William H. Welch of Johns Hopkins, Sir William Smyly of Dublin, Dr. R. T. Leiper of the London School of Tropical Medicine, Dr. Francis W. Peabody, Harvard University Medical School, Dr. George De Schweinitz of the University of Pennsylvania, Dr. S. S. Goldwater of the Mt. Sinai Hospital, N. Y., and others.

The Peking Union Medical College had its beginning at the Union Medical College, founded in 1906. In 1916 the property of the earlier school was transferred to the China Medical Board of the Rockefeller Foundation.



The tours started last year by the "Victory Special" in the interest of thrift are being continued in New York as a highly beneficent agency in the improvement of rural community life. Everywhere individual help extends to larger community programs.

### Pennsylvania System Uses Posters

At the crossing of Blencoir Ave Road over the  
 Pennsylvania System tracks at Cincinnati O at 5:20 P.M.  
 Feb. 9th 1921, automobile bearing license number D408

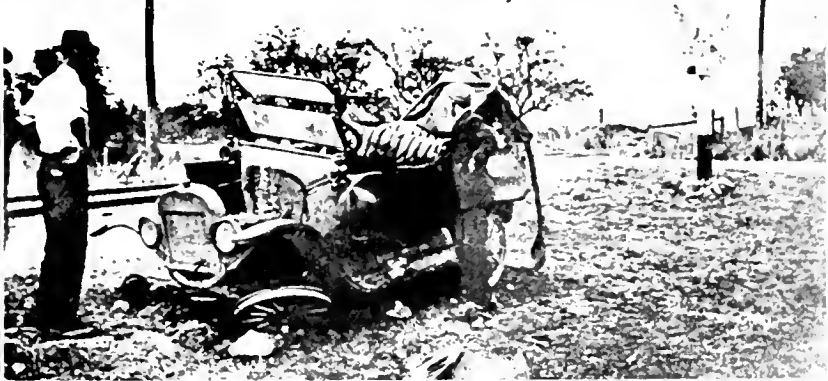
State of Ohio, registered in your name,  
 was observed to approach and cross the tracks and disregarded  
 the usual safety rules of slow speed and looking and listening  
 for approaching trains.

Observance of "Safety First" slogan will prevent an  
 accident such as is portrayed on reverse side of this card.  
 Blue Touring - White Wire Wheels

Ward Combs

Observer

This automobile was struck by a passenger  
 train at the crossing shown, where the usual safety  
 rules were not observed by the driver. One occupant  
 was killed and four others were permanently injured



International.

Because of the astounding increase of automobile accidents at railroad crossings this year, the Pennsylvania Railroad, through its Safety First Department is using methods of its own to curb these unnecessary risks. Observers are on the lookout for careless motorists, and pictorial evidence of their lapses are sent through the mails with a warning which they are not apt to forget. Every automobile driver should be a "Safety First" man.

### League of Nations Health Committee

The Health Organization of the League of Nations as finally developed, announces as its purpose the following objects: To act as a connecting link between the health authorities of all countries; to act as a clearing house for information concerning everything that constitutes a menace to public health; to form a sort of general staff when an epidemic threatens to overrun a number of countries; to coordinate the efforts of the Red Cross Societies in their work on behalf of "improvement of health, prevention of disease, and the mitigation of suffering throughout the world" as prescribed by Article 25 of the Covenant; to cooperate with the International Labor Office for "the

protection of the worker against sickness, disease and injury arising out of his employment;" to advise voluntary organizations requesting assistance; and, finally, to establish health missions when asked to do so by the League of Nations or by any country belonging to the League.

The membership of the professional Health Committee, which is to act as advisory to the Council and the Assembly in all matters of public health, is made up of twelve experts selected by the Council and private individuals with no regard to anything but their personal ability and standing. To these are added representatives of the International Labor Office and the League of Red Cross Societies designated by those bodies at the invitation of the council.

The Committee as now completed

has the following membership: Dr. G. S. Buchanan, Great Britain; M. Velghe, Belgium; Prof. Madsen, Denmark; Senor Pulido, Spain; Prof. Leon Bernard, France; Dr. Charles Havelock, India; Dr. Alberto Lutario, Italy; Dr. Yoneji Myagawa, Japan; Dr. Calmette, Morocco; Dr. Mimbela, Peru; Dr. Chodzko, Poland; Dr. Carriers, Switzerland; Dr. Luigi Carozzi, International Labor Office; Prof. Winslow, League of Red Cross Societies. The absence of any American name on this list is noticeable.

### Food Accessory Factors and the Teeth

The effect of diets deficient in vitamins has been studied from many angles, but in none are the results more interesting than in relation to the teeth. Many writers, notably McCollum and Pitz, Cohen and Mendel, and Zilva and Wells. Mrs. Mellanby has produced irregular teeth in pups by rachitic feeding.

Percy R. Howe, of the Forsyth Dental Infirmary for Children, Boston, Mass., in the March issue of the *Journal of Dental Research*, reports experimental work on animals, chiefly guinea pigs, in which diets deficient in each of the three known kinds of vitamins was able to produce a chronic condition in which calcium was slowly removed from the bony structures—the teeth and the bones—in such degree that carious areas appeared in the teeth, in some cases affecting the entire jaw, producing likewise marked alteration in the ribs and leg bones.

He was able to mark the enamel of the teeth by feeding, alternately, deficient and normal diets.

The same issue contains a study of scurvy and its bearing on the preservation of the teeth undertaken in the physiological laboratory of the University Medical School, Minneapolis, Minn., which shows that there is a rapid loss of calcium from the body of guinea pigs in scurvy. Acid-forming diet (that was also a scorbutic diet) caused a lowering of the alkaline reserve in the saliva in man. Symptoms of deterioration in the teeth appear much earlier than do the clinical signs of scurvy on a scorbutic diet, and the conclusion is reached that in order to maintain the teeth in good condition, the diet must contain sufficient antiscorbutic. The source suggested for the winter supply of antiscorbutic are cold storage vegetables and fruits, canned fruits, tomatoes and rhubarb, and dried fruits and fruit juices.

# THE NATION'S HEALTH

(Continuing MODERN MEDICINE.)

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## Economic Interest as a Motive in Health Work

THE motive for public health work during its early stages, down nearly to the present, was the fear of contagious disease. Health work concerned itself with quarantine, pest houses, and vaccination to prevent epidemics. When health work was first introduced into the schools, the motive was primarily protection against contagion. Health workers sought out the signs of contagious disease, vaccinated, and quarantined. The introduction of health work in industry had much the same history. Physical examination and other health work was largely to prevent the spread of contagion. Institutional health work was similarly inspired.

The principal motive is still fear, perhaps, but to it has been added another motive—almost equally strong—the motive of economic interest. It has been found that it is best to have healthy citizens, students, and workers. The protective measures of a few years ago have been enlarged. The public is still actuated by fear of epidemics, but it has also developed interest in strong children growing into robust adults. Preventive and corrective measures, other than for contagious diseases, are assuming larger proportions in public health work. The promotion of physical well being and personal efficiency is the basis of a great deal of the modern plea for health.

Likewise in the schools, health work has enlarged its scope. There is not less protective

work but more work for school efficiency. We hear now of the money lost to the community, through the retardation of children on account of physical or mental defects. We hear much of physical education as a builder of man power and a promoter of efficiency.

In industry it may be said that the economic motive has come to dominate the whole work. Health activity in industry is there because it pays. It pays to have efficient workers. It pays to prevent accidents and disease. It pays to lessen the insurance cost from accidents and the drain upon mutual benefit societies on account of sickness. The motive of industrial efficiency is now uppermost in making physical examinations, in the provisions for industrial medicine, and in the work of industrial nurses.

The combination of economic and humanitarian motives with the motive of self protection is the secret of the vast progress which health work is making in communities, schools, industries, and institutions.

## Physical Handicaps and Social Case Work

THE individualization of treatment or "case work," is an underlying principle, in common, of medicine, of teaching, and of scientific employment. This principle is used also by the social case worker, but his specialized service is the treatment of behavior through attention to all the conditions that affect it—physique and health, temperament, desires, training, employment, family, and outside group connections, and other life situations.

To what extent the practice of social work has been concerned with physical handicap, is indicated in references to the subject by leading authorities. In Devine's "Misery and its Causes," two of the three typical situations are described under the captions, "Out of health" and "Out of work." Of the five thousand dependent families in New York City whose condition is analyzed in this study, more than one-half may be identified as presenting problems of physical disability. In Mrs. Alice Willard Solenberger's study of "One Thousand Homeless Men," approximately one-half represent cases of physical disability. A reading of case records of varying lengths occurring in the first one hundred pages of Miss Mary E. Richmond's "Social Diagnosis" shows that approximately one-half of those where the description is adequate for determination of the point are instances of physical disability and possible handicap. In a study, made under the auspices of the Detroit Community Union, of 752 families designated as "trouble cases," having received the

attention of five or more agencies during a given year, approximately two-thirds present problems of physical disability.

The practice of social work may be expected to improve through the development of a procedure in the rehabilitation of physically handicapped persons. While social case workers have had long experience in treating physical handicap, the present rehabilitation movement will tend to broaden their connections with other professional groups. Social workers will have more incentive to make contact with their cases, and to attack community problems, above the poverty line. Local surveys in the interest of the physically handicapped will widen the scope of community self-appraisal, and make a convincing connection between health agencies and programs, on the one hand, and problems of individual need on the other. Additional reasons will develop for correlating the work of schools, medical agencies, industries and welfare organizations. Solutions will be found for many who are now considered to be community liabilities. As rehabilitation work by states and voluntary societies increases, more extensive provisions in the fields of medicine, education and employment will make possible more intensive and adequate service on the part of social case workers.

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### Industrial Medicine and Civil Leadership

**B**ETTER civic and medical leadership as a by-product of industrial medicine was specially stressed by Dr. Otto P. Geier, in retiring from the presidency of the American Association of Industrial Physicians and Surgeons, in an address printed elsewhere in this issue. He placed emphasis upon the fact that an industrial physician may measure his real capacity not only by the quality of the service that he renders in his industrial clinic, but perhaps even more largely by his educational influence upon: (1) The worker; (2) the plant executives; (3) the industrialist; (4) the local profession; (5) the social worker; (6) the public health officer; (7) the public; (8) state legislation; (9) the medical schools; and (10) the American Medical Association. In having this broad view of his relationship to industry and society as a whole, the industrial physician definitely adds interest to the routine of his daily work.

Dr. Geier urged that the science of industrial medicine affords all of these groups "a better understanding of life in all of its aspects and should eventuate in a type of medical and social philosophy that will make for the highest character of much needed civic and medical leadership."

### So-Called Food Poisoning a Preventable Disease

**T**HE "average man"—medical and lay—has peculiar ideas about food and what food does,—that is, when he is sick. To the well, food is counted as one of the joys of living, and little thought is paid to the many steps food takes in its passage from raw material to human tissues. When a few persons are made ill by eating poisoned foods, the occasion is rare enough to warrant newspaper headlines, universal fear, and, usually, complete ostracism of the suspected material. Then the scare dies, a prize fight or a divorce scandal heads the front pages,—and the world remains as ignorant as before about so-called "food poisoning."

In another column of this issue we are fortunate in being able to present a comprehensive and scientific abstract of the present status of poisoning by food. Dr. Street emphasizes the comparative rarity of serious illness arising from poisoned food, quoting Rosenau's statistics that in twenty-two years 150 persons are recorded in the United States as having been made ill by botulism, with 111 deaths. The possible sources of trouble in the raw material, in factory, storage, distribution, and, finally, in the home of the consumer, are so multiple that it is really surprising to find so few substantial cases of illness produced by diseased food. Naturally, Rosenau's statistics include only those cases reported; there is not and never has been statistical or scientific proof that such a thing as "ptomaine" poisoning exists. Rosenau, Savage, Chapin, and Vaughan are quoted in emphatic protest against the conception of ptomaine,—a protest which we should like to see scattered broadcast. Too many individuals still labor under the ptomaine delusion, too many diseased appendices, gall bladders, or what not, are overlooked—often until too late—because of the traditional belief in the danger of a perfectly prepared can of salmon, or a perfectly fresh lobster!

Food poisoning does occur, but Street believes that the general term should be replaced by more definite etiological statements. Food may be injurious because of natural poisons, animal parasites, plant parasites, toxins, and in other less important ways. Food may become infected—generally with a bacillus of the *Gaertner* type; or become poisoned with a toxin such as that produced by the *Bacillus botulinus*. Meat is the food most likely to become infected, although milk, cheese, even vegetables, may carry the infection. This type of poisoning appears most commonly in prepared meat foods and is the type often erroneously called "ptomaine." It is always, how-



ever, an infection, and may occur ante-mortem through infection from without. Being an infectious disease of known etiology, it is likewise a preventable disease! Extreme care in marketing, with *thorough* cooking just before serving, could prevent most outbreaks of poisoning from this group.

Food poisoning by means of toxins has received attention lately because of the cases of botulism due to canned olives and spinach so well reported in the daily press. It is important to note that neither this type of "toxic" food, nor the infected food can be detected by the senses in all instances. The bacillus which produces *botulism* apparently grows anywhere and may be found in animal as well as vegetable food. Street believes that home packed foods have been responsible for a large proportion of the cases thus far reported. This is not an argument against home packing, but is a very strong argument in favor of the employment of the utmost care and the greatest scientific skill in food preparation.

### General Hospitals and the Care of Tuberculosis

THE National Tuberculosis Association in 1916 passed a resolution urging general hospitals, "for humanitarian reasons and purposes of instruction," to provide separate wards for the care of cases of tuberculosis. Five years later, at the recent Boston meeting, the American Medical Association adopted a resolution recommending similar action because the present practice of denying admission of tuberculosis patients to general hospitals "has resulted in the relegation of tuberculosis largely to specialists, to the great detriment of the tuberculosis patients, who are thus compelled to seek in special places the necessary medical skill, and of the general practitioner of medicine, who is thus deprived of the opportunity to acquaint himself with the diagnosis and treatment of tuberculosis."

The United States Public Health Service in an authorized statement endorses and commends this action of the American Medical Association and notes with interest the "very marked change in medical sentiment." It anticipates remarkable advance in popular knowledge of tuberculosis as a result of the establishment of this new policy. "Visits to the hospital will familiarize members of the patient's family with sanitary precautions, such as the sputum cup, which commonly horrifies them and is soon given up by home patients."

The value of caring for tuberculosis patients in general hospitals, in the promotion of medical and nursing education, is universally recognized, and it is hoped that the new suggestion will be

widely followed. The Jersey City (N. J.) Hospital has recently opened a large tuberculosis ward and placed it under the medical director of the county tuberculosis hospital. Such fortunate relations should be generally encouraged.

An important point to be considered in connection with this new plan was brought out at the 1921 meeting of the National Tuberculosis Association in a resolution disapproving of the care of early cases in general hospitals and urging the admission of advanced cases only. The reason given is that early cases fare better in institutions outside of cities; also the depressing mental effect of association with advanced cases should be avoided.

### Studies in Physics as Applied to Hygiene

THE study of the physical problems underlying the hygiene of clothing and housing, so brilliantly initiated by Pettenkofer fifty years ago, has been relatively neglected, and careful researches along these lines are always welcome.

A study by Grabham<sup>1</sup> of the physical characteristics of various textile materials suitable for clothing in the tropics is quite in the Pettenkofer manner. By reading thermometers placed under layers of cloth of various colors and textures, and inside cylinders painted with different paints, the author obtains detailed quantitative confirmation of the important influence of color on absorption of heat rays recorded by Benjamin Franklin at the close of the eighteenth century. The differences are surprisingly great, the thermometer under white drill rising between 11 a. m. and 1 p. m. to 57.6 degrees C., as compared with figures ranging from 72 to 76 degrees for various grades of khaki and with 85 degrees for thin black lining. Porosity was also tested with an ingenious air pressure apparatus, an old worn piece of calico giving the most favorable results, but evaporation was about the same with both calico and khaki. The main practical deduction is obviously the great superiority of white to khaki clothing for warm climates, a superiority even greater than would offhand have been expected; but the technic used in these studies, while in some respects tentative, is worthy of more general development and application.

An exhaustive report on studies of the rate of heat conduction through various building materials carried out in the laboratories of applied physics of the Technical High School at Munich<sup>2</sup>

1. Grabham, G. W. Some Factors in Thermal Sanitation in the Tropics. *Journal of Hygiene*, xix, January, 1921. p. 245.

2. Knoblauch, O. Rasch, E. and Reiher, H. Die Wärmeleitfähigkeit von Bau- und Isolierstoffen und die Wärmedurchlässigkeit neuer Bauweisen. *Gesundheitsingenieur*, 1920, Heft. 52 p. 607.



constitutes another very valuable contribution to physics as applied to hygiene. These experiments have been going on since 1912, first with a small laboratory testing apparatus and later in a small experimental building, the two methods yielding closely concordant results, which should be of great value to the student of the hygiene of building construction.

## Capacity and Environmental Factors in Efficiency

THE physical work performed by an individual will obviously depend upon two sets of factors, physiological and environmental; and the remarkable recent stimulation of research in industrial physiology all over the world is throwing light upon both problems.

The work of Dausset and Boigey in Paris, reported in *Paris Médical*, April 16, is illuminating in regard to the analysis of inherent differences in capacity. Using a special form of "universal goniometer," they record the extent and frequency of repeated movements of various muscles and report characteristic curves for individuals of four different neuromuscular types. As demonstrated by Masso and Yoteyko, these curves exhibit a plateau followed by a descending curve as fatigue sets in. Dausset and Boigey recognize:

(1) A strong and nervous type showing a long plateau followed by a slow decline.

(2) A type, muscularly powerful but deficient in nervous endurance, showing a long plateau followed by an abrupt decline.

(3) A type, of slight muscular power but marked nervous endurance, showing a short plateau with a slow decline, and

(4) A type, weak in both muscular and nervous power, with short plateau and abrupt decline.

The authors believe that such a classification should be of value in selecting forms of physical exercise (and presumably forms of industrial employment) suitable to a particular individual. It is unlikely that the facts will prove quite so simple as such an analysis would indicate, but the work is well deserving of repetition.

On the environmental side a very valuable contribution comes from the Rand gold mines of the studies of A. J. Ornstein and H. J. Ireland, published in the March issue of the *Journal of the South African Institution of Engineers*. These authors report striking confirmation of the work of the New York State Commission on Ventilation in regard to the influence of high atmos-

pheric temperature on the performance of physical work. The South African observers used ergometers simulating certain operations performed in gold mining and measured the cooling effect of the atmosphere by the use of the katathermometer.<sup>1</sup> Considering efficiency with a dry katathermometer reading of 6 as 100, the work performed fell to 50 with a katathermometer reading of 1. Electric fans blowing on the subjects caused an increased performance of 32 per cent in one case and of 46 per cent in another; and the authors estimate that under actual working conditions in the mines there is a 21 per cent loss in efficiency as a result of high temperatures.

## Immunization Against Typhus Fever

THE genius of human nature for plucking the flower, safety, from the nettle, danger, is not only proverbial but a very vital fact. Even the tragic disorganization of health administration in Russia furnishes an example; for the alarming increase of typhus fever in that distracted country has offered the stimulus and the opportunity for experiments on immunization with the serum of patients which may prove to be of real significance and value. The British Mission to South Russia during the epidemic which completed the disintegration of Denikin's army, used a vaccine prepared by taking blood from a donor in the fifth to the seventh day of the disease, defibrinating, adding carbolic acid and heating for one hour at a temperature of 57 to 58 degrees C. Three doses of 1, 2, and 2 c. cm. were given at intervals of five to seven days. The procedure is described by J. M. Mitchell and G. P. N. Richardson in "Some Notes on the Prophylaxis of Typhus Fever" in *The Lancet* of April 9, 1921. Among 195 vaccinated persons, only one case occurred, while among eight hundred unprotected persons sixty-nine cases developed, with thirteen deaths. One Russian bacteriologist, working in the Mission Hospital, became so enthusiastic that after a heavy dose of protective vaccine (5 c. cm.) he inoculated himself with 1 c. cm. of fresh blood from a patient on the fifth day of the disease. This ultra-rigorous test resulted in a severe case of typhus.

The pioneer investigators of this problem in Soviet Russia itself have been Liotropov, Ilatogorov and Marzenevsky, reported by B. Sokolov in "Medicine in Soviet Russia," *The Lancet*, April 23, 1921. Their methods are essentially the same as that described above, although Ilatogorov insists on the importance of a polyvalent serum and uses larger doses. He concludes that the vaccine

1. For a discussion of the relation between katathermometer and temperature readings, see C.-E. A. Winslow and E. L. Hewitt; Relation between Katathermometer and Thermometer readings under ordinary indoor conditions. Heating and Ventilating Magazine, xviii, March, 1921, p. 27.

decreases susceptibility to one-fifth of its normal amount. Both the vaccine thus prepared from the blood of a patient at the height of the disease and the serum from recovered patients have been used by Ilatogorov in typhus therapy with promising results.

The conditions under which experiments are carried out in Moscow and Petrograd today are naturally such as to make careful scientific control exceedingly difficult. The opportunity of dealing with large numbers of typhus patients in the immediate entourage of medical institutions of relatively high development has, however, been an unusual one; and the results obtained are suggestive and interesting.

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THE *Boston Transcript* comes down hard on the state senate of Massachusetts for passing a bill which would practically nullify the law for vaccination against smallpox. "The bill provides that the requirement of the law shall not apply in the case of any child who presents a written statement signed by a registered physician, or by parent or guardian, to the effect that the writer believes that vaccination would be injurious to the health of the child." In other words, the judgment of parent or guardian, quite apart from the opinion of a physician, must be accepted as controlling in the matter of vaccination. "There should be cast against it a vote so large," says the editorial, "as to put an end to the attempt to remove a precaution which is regarded by the great majority of the medical profession and by an enlightened body of public opinion as a necessary measure of protection against a deadly disease."

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THE telephone has sprung into such common use during the last fifteen or twenty years that health workers have questioned the possibility of the transmission of diseases of the respiratory type through direct contact with infected transmitters and receivers. The results of an interesting series of experiments on the bacterial content of telephones are quoted by Saelhof in the second number of the *American Journal of Hygiene*. Cultures from the transmitters and receivers of a series of public telephones were taken at various periods, before the influenza epidemic of 1919-20, during the epidemic, following the epidemic, and in 1920 during the second post-epidemic period. The telephones were classified into three groups: clean, filthy, and very filthy. Various pathogenic bacteria were isolated from these telephones but the data presented are of such nature that no conclusions regarding frequency of transmission can be

drawn. The telephones during the influenza epidemic contained more pathogenic organisms than during the interepidemic periods. As stated by the author of the study, "It is probable that the danger of infection from this source is light."

In a series of experiments Saelhof was able to show that organisms lived two or three days longer on filthy transmitters than on clean ones. The infectivity of a mouthpiece would therefore vary inversely with its cleanliness. Frequent sterilization of telephones by thorough cleansing followed by immersion in a disinfectant, and teaching of the public in the hygienic use of the telephone are recommended as the means of minimizing the danger from the use of the infected telephones.

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THE National Conference of Social Work, which held its annual meeting in Milwaukee, June 22-28, again proved by its program that health work to a large extent underlies social work. The conference regularly devotes two of its ten sections entirely to health and in addition a goodly proportion of the other sections was given this year to health problems. Nearly half the program had a direct bearing upon health problems. Such facts should tend to bring the physicians, health workers, and social welfare agencies into closer relationship in investigation and research, and in the administration of social and health activities. Industrial and economic problems enter into the picture as well as the facts brought out in the organization of family social work, and a more constructive program may be expected to evolve from the correlation of activities. Robert W. Kelso of Boston is the new president of the National Conference. The next meeting will be held in Providence, R. I., in 1922.

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THE acceptance by Dr. Lee K. Frankel of the work of planning a welfare department for postal employees, which was recently announced by Hon. Will Hays, Postmaster General, has been received with enthusiasm by health and welfare workers. Dr. Frankel's experience in developing the health and welfare work of the Metropolitan Life Insurance Company will be a practical guide in the new undertaking.

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THE National Convention of the American Red Cross scheduled to be held at Columbus, O., in October has for its purpose the wide consideration of the permanent program of the Red Cross. It will be the biggest thing in the form of a Red Cross gathering ever held.

# HEALTH IN INDUSTRY

Official Organ of the American Association of  
Industrial Physicians and Surgeons

Editors for the Association

THOMAS CROWDER, M.D.

CHARLES LAUFFER, M.D.

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## The Educative Potential in Industrial Medicine\*

Better Civic and Medical Leadership  
Is a By-Product of Industrial Medicine

By OTTO P. GEIER, M.D., CINCINNATI MILLING MACHINE COMPANY, CINCINNATI, O.

THE final test of any organization such as the Association of Industrial Physicians and Surgeons, is perhaps the amount of influence exerted, not upon its members alone but upon society at large. In the last analysis, therefore, its value depends upon educational influence.

Let us take a brief review, therefore, and see how an objective of general educational value might best be accomplished. Fundamentally, such an estimate must begin with a thorough self-analysis on the part of constituent members. It is high time that the industrial physician determines just what position in the industrial sector he should properly command. To reach an intelligent conclusion in this regard, he must have thorough understanding of (1) The function of industry and its relation to society; (2) the scope of an industrial relations department; and (3) the integral factors of such department, viz.: employment, training, health and sanitation, safety and social welfare.

### Self-Appraisal Called For

When the industrial physician has a thorough comprehension of the field of work of which his is a part, when he has measured his knowledge and his capacity to handle and fit his work into all phases of personnel work, he will for the first time be in posi-

*The final test of industrial medicine is the value of the service it renders. The capacity of the industrial physician to serve is measured by the man, his preparation, his vision, and, most of all, his attitude toward his job.*

*For the industrial clinic is no circumscribing individualism, but an illuminative social study, and the development of anything like adequate service evolves a social philosophy which affords the drive toward civic and medical leadership.*

tion to use himself 100 per cent in medical service to industry.

The most pathetic sight today is to see an industrial physician of fair intelligence, holding a circumscribed, small niche in personnel work, with no dignity attached to his office—an underling to men of inferior education, intelligence, and capacity. An inclusive educational program, therefore, needs to begin with:

(1) Self-education.—A thorough knowledge must be attained of the present working methods and literature of industrial hygiene, sanitation, and safety. Occupational diseases must occupy an important position, and the efficient treatment of injury and illness as it affects the worker must be emphasized.

(2) The education of the worker to the free use of these facilities with

an improvement in his personal hygiene—including dental hygiene, is an essential corollary, and the better selection of physicians and the use of consultants are called for.

(3) The educational program would reach the executives, superintendents, general foremen, and foremen, urging the dollars and cents value of good health, with special emphasis on the prevention of disease and accident.

(4) This would include the education of management, impressing boards of directors and stockholders with the economic value of good health as a factor in production, industry's responsibility toward community health and living conditions, and legislation looking toward improvement in that direction.

(5) Such a program would educate the local profession, making it sympathetic to the efforts of industry to improve health, to secure its better attention to the industrial workers' health problems, benefiting medical science by contributing the accumulated records of the industrial clinic. The importance of regularly appearing before county medical societies with case reports cannot be overstated. These should be so written as to emphasize not only the scientific handling and care of the case but should stress the social and economic methods that obtain in the industrial clinic.

(6) A program of this kind includes educating the social worker so as to supplant the social reformer with his ill-considered and unwise

\*Address as retiring president of the American Association of Industrial Physicians and Surgeons, Boston, Mass., June 6, 1921.

agitation. Because of the fact that the medical profession as a class does not take an active, energetic part in public discussion, the laity more and more is assuming the directing hand in planning legislation in health matters. Compulsory sickness insurance would be operative in several states of the Union today, I believe, had it not been for the contributions toward the discussion of this subject made by the industrial physicians whose work has enabled them to study mass health problems and who know, therefore, how ill considered were the promises of the proponents of sickness insurance.

(7) The health officer also needs to be enlightened in matters of industrial hygiene, stimulating him to an interest in the subject of factory sanitation, encouraging him to use his weekly bulletin for the promotion of this work.

(8) Perhaps most important of all is the process of educating the public through local civic organizations to a better understanding as to the fundamental value of community and state health programs, with the insistence that these shall be administered free from partisan control, and adequately financed.

(9) Direct influence needs to be brought to bear on state legislators through local representatives, studying all legislation—presented either by labor or capital—which affects the welfare of the worker. The industrial physician should have first hand knowledge of compensation laws, occupational disease laws, factory workshop inspection laws, so that he may be in position to present facts not controvertible when legislation affecting these things is up for discussion.

### Socialize Teaching Profession

(10) If any or all of the above educational facilities properly belongs to the industrial physician, if they are at all worth while, then it is doubly the obligation of the industrial physician to bring home all of these facts to that part of the medical profession which has charge of our medical schools and which by virtue of that fact is determining the type of medical men that are to come out of our medical colleges. The medical colleges are molding the men today who will control the profession of tomorrow. The graduates will either be individualists, unfitted to cope with society's problems, or they will be taught to think in terms of the community, in terms of society as a whole, and thereby fitted to become leaders of society's progress.

(11) Finally, the collective action of all industrial physicians, bound together as they are in this Association, should be such as will influence our parent organization, the American Medical Association, to accept this new specialty as fundamental to the progress of medicine in this industrial era; that it may assist this Association more vigorously in promoting the educational propaganda that is herein outlined. For, if the American Medical Association can be made to take the broad vision of its larger responsibility, if it can be made to realize that the general application of our present accumulated science for the prevention and cure of disease is ten to fifteen years behind this knowledge, if it will use the industrial approach to help bring forward the economic and social aspects of medicine, then will the medical profession come out of its isolated position in state and national affairs, it will hold its proper position in the councils of the country and gain its deserved place among those who must plan today that this rich nation tomorrow may afford its citizens long years to live, a decent place to work and to earn, to the end that each citizen may be a most productive independent, contented unit of society.

In relinquishing the presidency of this Association, I wish that I might crowd in my few final words all the hopes and aspirations that I hold for the future of this Association. This much I know: The strength or weakness of our position as an Association will be in direct relation to the breadth of view that each member of this Association holds towards his particular job and his specialty at large. In outlining our relationship to the broad educational medical field, I have attempted to supply at least the text for our further advances into industrial and economic fields.

If the majority of the members of this Association are content with "puttering around" within the circumscribed area of their industrial clinics, satisfied to do the menial things with no conception of the true value of their work in the field of industrial relations, then of course will all of the foregoing have been said in vain. It must be apparent, however, that the very kind and quality of industrial medical service should afford the members of this Association a better understanding of life in all of its aspects and should eventuate in a type of medical and social philosophy making for the highest character of much needed citizenship and medical leadership.

### Frankel Directs Postal Welfare

Announcement is made of the appointment of Dr. Lee K. Frankel as director of the Welfare Department for postal employees, which is being fostered by the Honorable Will H. Hays. The project is very far-reaching in its scope and of outstanding importance in the health annals of the country. There is no one in the field of public welfare who is by business insight and experience better fitted successfully to engineer an undertaking of this kind. The development of the Welfare Department of



the Metropolitan Life Insurance Company under his directorship is sufficient earnest of his capacity to handle the situation.

Dr. Frankel is only loaned by the Metropolitan Life Insurance Company for the period necessary to make a survey of the situation. Dr. Frankel expects by the Fall he will be able to make a report of his study of the situation and outline a plan of what should be done and indicate what it appears possible to accomplish.

### Institute for Graduate Nurses

The Michigan State League of Nursing Education has just completed a two weeks institute for graduate nurses interested in hospital administration and training of student nurses. One hundred seventy-six graduate nurses from seven different states attended. Lectures, clinics, demonstrations and round tables were held on the various subjects pertaining to nursing activities.

# The Medical Department in Industry

## Employees Are Entitled to the Best Possible Service, but the Profit That Accrues Is Mutual

By MARVIN Z. WESTERVELT, M.D., MEDICAL DIRECTOR, WINCHESTER REPEATING ARMS COMPANY, NEW HAVEN, CONN.

SHOULD the question be asked, "Why a Medical Department in Industry," we would give as one of the reasons that in these days no city, town, or even small village would be thought to be complete in its organization unless some provision were made to look after or supervise the health and sanitation of the community. Then why not an industrial plant, often with the population of a small city in its employ? This supervision may be in the form of a completely organized board of health as in larger cities, or simply a health officer as in the smaller towns or villages; in industrial plants it takes the form of a medical department which may be more or less elaborate as needs may dictate. The foregoing is simply one, general reason for a Medical Department in industries. Let us particularize a little, and in so doing we feel we can best cover the ground by referring to our own work at the plant of the Winchester Repeating Arms Company. By doing this we can state facts and figures secured at "first hand" and not rely upon those gained from information less concrete with the attending likelihood of unreliability. For convenience in handling the subject has been divided into four chief divisions as follows: I. Its field; II. its function; III. its relationship to other departments, and IV. its future. These chief divisions have been further subdivided somewhat as follows:

### I. Its Field.

- a. General hospital work.
- b. Sanitation and hygiene.
- c. Health engineering.
- d. Consultant and advisory.

### II. Its Function.

- a. General Hospital Work.
  - 1a. Caring for sick and injured employees.
  - 2a. Diagnosing and referring of cases.
  - 3a. Performing or assisting at all operations.
- b. Sanitation and Hygiene.
  - 1b. Detecting and preventing spread of disease.
  - 2b. Sanitary inspections; toilets, wash-rooms, drinking water, etc.
  - 3b. Hygiene inspections; air, light, ventilation, heat, etc.
- c. Health Engineering.
  - 1c. All of a and b.

- 2c. Physical examinations.
- 3c. Recreation, cafeteria, etc.
- d. Consultant and Advisory.

### III. Its Relationship to Other Departments.

- e. Coordinate with all, subordinate to none.
- f. As a "production" factor.

### IV. Its Future.

These subdivisions will be considered in the order given.

### General Hospital Work

1a. *Caring for sick and injured employees.* This, we presume, is the chief reason for a medical department in any industry. At least, it has been so considered in the past; but as the work has developed other activities have taken on so much importance that it is now an open question as to whether the mere doing up of cuts and bruises is the chief function of the department. However, that this still continues to be a large part of the work, if not the most important will be borne out by the following figures.

During the year 1920 the average monthly "population" of the Winchester Repeating Arms Company plant was between eight and nine thousand. During the year the activities of the hospital staff were divided up as follows:

Caring for 13,456 new injuries.  
Making 28,986 re-dressings.  
Ministering to 10,091 cases of sickness.

Taking, developing and interpreting 121 x-ray plates.

Making 213 physical examinations.  
Transferring 146 injured or sick employees to their homes.

These constitute simply the activities in behalf of the sick and injured employees and do not take into consideration the activities that will be spoken of under other headings. Taking just those activities enumerated above we find a total of 54,869 ministrations, a weekly average of 1,056 and a daily average, including Sundays, of 151. This number will equal that of the average hospital in any city of eight or nine thousand population, or even larger. Do not these figures prove the existence of this Medical Department justifiable; and, if this one, then why not others?

We would call attention to one fact

as disclosed in the foregoing figures that goes a long way to prove the advantage,—in dollars and cents if it seems preferable to express it in that way,—in having a medical department in industry. Note the comparison between new injuries and re-dressings—13,456 to 28,986 or only 2.15 re-dressings per new injury. This low average we do not attribute to the efficient work of the hospital staff but rather to the fact that by prompt and painstaking care of the smaller injuries we are saved the larger and long-drawn-out infections. "The stitch in time saves nine," is certainly exemplified right here. What this means to the employees in the saving of lost time will be touched on later. What it means in the saving of serious infections may be judged from the fact that from January 1, 1918, to January 1, 1921, we cared for 54,958 new injuries and in only two cases did an employee lose any portion of his body due to an infection. In both cases it was an index finger that was lost, the first one, becoming tuberculous in character, attacking first the joint and then the bone, was so far advanced when first reported to us we could do nothing but advise amputation, although, with the patient's consent, we did try to save it. The second case remained under our care only three days, then went to his own physician who, after one month's treatment decided he would better amputate, but the patient "moved on" to a third physician who finally did amputate. A loss through infections amounting to 0.00003 per cent for a period of three years is surely the strongest kind of an argument that could be offered in favor of a medical department in industry, for it is only by having the facilities at hand to attend at once to not only the big injuries, but the little ones as well, that such an extremely low average could be attained and maintained.

In cases of sickness we simply render emergency treatment, the patient either returning to their work or are transferred to their home and referred to their own physician. Rest rooms are a part of the hospital suite. Here the employee may lie down for a



A first aid room serving an industrial plant of nine thousand people must be equipped for major work, but its chief service is in the prompt care of every minor injury and disorder which constitutes the best part of preventive medicine.

period of time if not able to return to his work at once.

*2a. Diagnosing and referring cases.*—We have just spoken of referring our "sick" cases to their own physician. In addition to these, employees come to us for advice or examination. These cases are gone into, the history and symptoms secured and the patient then advised as to the best course for them to follow, which may be to simply see their own physician for a course of treatment or to see a specialist where it is evident that such a one would be of more service than a general practitioner. In addition to these cases, certain classes of injuries or end results of injuries require the services of one specialist or another; or possibly hospital care and treatment is called for. In all these cases we act as a clearing house, performing a selective function and assigning the case to the proper physician, surgeon, or institution for care or treatment. It can readily be seen that this would not be the least important of our functions and often means much to our employees. If left to their own selection the men often drift from one form of treatment to another, frequently following the advice of the last friend to whom they happened to retail their troubles, and all with little or no beneficial results. In fact, a great many cases of total or partial permanent disability might have been avoided if wisely and correctly directed and cared for in the

beginning. These disabilities are not only a hardship on the patient because of a lowered earning power and a greater or less disfigurement, but it means also a needless waste of dollars and cents to the employer, possibly in compensation, but surely in a loss of productive power.

*3a. Performing or assisting at operations.*—In our own hospital at the plant we are prepared to do all operations that are usually done under a local anesthetic, including amputations and those of a like nature. Those cases requiring a general anesthetic are removed to one of the city hospitals. The head of the Medical Department performs all operations at the plant hospital and either performs or assists in performing all of those referred to the city hospitals. In addition to this, he holds himself in readiness to be present,—and assist, if so requested,—at any operation on any employee, whether this operation is made necessary because of some injury received at his or her work or not. He will also be present and assist at any operation on any member of any employee's family. This latter is done simply because by so doing the employee comes to his work as usual, knowing there will be some one at the scene of operation who will be of service where he could not be and who will bring him a report at the earliest possible moment as to the outcome of the operation and the condition of the patient. Thus,

the employee's daily wage is saved to him and his anxiety is no greater, if as great, as if he himself were sitting in the waiting-room at the hospital awaiting the result of the operation. On the employer's side, the man's work for the day is conserved and the consequent loss in production is saved.

### Sanitation and Hygiene

*1b. Detecting and preventing spread of disease.*—This is done by daily inspections throughout the plant, by investigation of cases reported to us by foremen or fellow employees and by examinations of employees who voluntarily report to us because they "do not feel well" or, "while dressing this morning a rash was noticed somewhere on the body." When a case of infectious or contagious disease is found, the employee is taken home at once and not allowed to return until a clean bill of health is furnished by the attending physician. Even suspicious cases are sent home and kept under observation for twenty-four or forty-eight hours. In cases of vermin infection the person is advised as to a form of treatment to rid themselves of the "critters" and the case is followed up until we are sure that satisfactory results have been attained. These cases are allowed to remain at their work but every precaution is taken to protect their fellow employees.

*2b-3b. Sanitary inspection and Hygienic inspections.*—These two headings can be considered briefly together, the character of the work being the same and is performed in a like manner in both instances. The entire plant is "covered" twice daily by members of the Medical Department staff. All cases of defects are reported at once by telephone to the hospital, and from there relayed to the proper department for attention. Once each month the head of the Department makes a personal tour of inspection covering the entire plant. In addition to this he personally investigates all cases calling for special investigations and recommendations. The inspections take in the heating, lighting, ventilating, toilet and drinking facilities, wash and locker rooms, cafeteria and recreation centers. It is only by an eternal vigilance, exercised by a department "on the grounds," in some such manner as we have described, that an industrial plant, especially one of any size at all, can be kept a healthy and safe place in which to work.

*1c. General and special.*—In the past the worker at the machine or



bench has received less thought than the machine. We have regarded the nature of the machine, its capabilities, its physical well being and almost entirely disregarded the man operating it. Now we are beginning to realize that the individual worker is at the bottom of all the machinery of production. This being true, why should we not have our health engineers as well as our manufacturing engineers, civil engineers, or industrial engineers or any one of the dozens of other engineers? All of the work we have spoken of thus far would properly come under the functions of a health engineer. But there is still another activity which, while implied in the foregoing, requires the special emphasis given it in our next sub-division.

*2c. Physical examinations.*—There is not a machine set up in this plant, and I doubt if there is in any other plant, that is not first thoroughly inspected, examined and even tested. Then why should not the man who is to run it be also examined? The stock that goes into the making of the products of the plant is submitted to inspections and tests. Then why should not the man be who is going to get out these products? No matter how perfect the machine or the material, if the man back of them is not physically fit there is bound to be an unnecessary economic loss and waste. And then, too, in inspecting a machine it may be found to be defective simply through a loose part. The tightening of this part renders the machine capable of the work it was intended for. In examining a prospective employee he may be found unfit to do the work he seeks because of some minor defect which, upon being corrected, renders him capable of doing that work. On testing a lot of steel it may be found to fall short of specifications required for certain products and yet sufficiently good for other products. On examining an applicant he may be found to be below the requirements for a certain job but all right for some lighter task or different class of work. If the defective machine or material is not immediately thrown out upon the scrap heap, then why throw the defective man out upon the industrial scrap heap without first seeing if there is not some place that he can fit in,—some work that he can do?

Physical examinations should not be made with the idea of rejecting all those who happen to be below normal, physically. It has never been our purpose to "cull out" the unfit, but rather to find a place where the unfit

will fit. Finding a job for every man and fitting the man to that job will tend to conserve the man's energy, promote contentment, increase production and lessen accidents. Through examinations and re-examinations, the early detection and possibly the elimination of organic or functional diseases is rendered more likely and more possible. The extent to which examinations should be practiced and the frequency of re-examinations depends upon the character of the work, the conditions under which the work is performed, the previous history of the applicant or employee and the conditions found in the first examination. Physical examinations are not only practicable but they are the cheapest form of health and life insurance that any person can invest in. They are also a mighty good investment for the employer in that they tend to increase production, cut down the labor turnover and reduce the cost of compensation.

*3c. Recreation and cafeteria.*—Two important factors in keeping employees healthy and happy are the food and recreation they secure. It is to the management's interest therefore, to have supervision over these two factors, at least during the hours of employment. As both food and recreations have such a direct bearing on the health of the employee, they should come under the direction of the Medical Department. Well balanced meals can be worked out so that a substantial lunch or dinner can be

served at low cost. And then, remembering that "all work and no play makes Jack a dull boy," a program of dances, games and other forms of recreation can be worked up to fill in the extra time during the noon hour. The benefits of these activities all come back to the management in the form of increased production, contented employees and a strengthened spirit of loyalty. Grouches become so scarce that a "grouchee" is almost an unknown person.

### Consultant and Advisory

We have already referred to the fact that employees come to the hospital for examinations and advice,—not because they are really sick, but "just don't feel altogether right." Physicians and nurses on the Medical Department staff are always ready and willing to give of their time, services and knowledge to the employee in trouble, be it mental, physical or domestic in character. It makes no difference whether the trouble was caused by their work or not, or whether it has to do with conditions in or about the factory or offices. Whatever or wherever the source of worry it is probably proving a hindrance to that person's best productivity and is therefore, a fit subject for our attention. A simple word of good cheer or friendly advice may, and often does go a long way toward producing contentment;—without contentment no one can do their best work. This is why we try to heal



The hospital force during the year of 1920 cared for 13,456 new injuries, made 28,486 redressings, and ministered to 10,091 cases of sickness. Supervision is extended when desired to the families of employees.



Provision in matters of health supervision has resulted for this firm in a loss through infections amounting to 0.00003 per cent for a period of three years. It is not only care for big injuries, but for the little things as well, that maintain such an average.

and restore not only the physically sick but the mentally sick as well. The relationship of physician and patient is not lost sight of simply because we happen to be a part of an industrial organization. These people form our clientele just as surely as do the patients of any physician; we have their interest and welfare just as much at heart and treat their confidences just as sacredly. It is only by adhering strictly to these principles that any industrial Medical Department can expect to do its best work.

#### Relates to Other Departments

*c. Coordinate with all, subordinate to none.*—"They are many members, but one body," and just as it was proved in Scriptural text that each member was dependent upon the other members, so is it true that every department in an industrial plant has need for the services of the Medical Department and the Medical Department has need for the cooperation of all other departments. In some industrial plants it has been and is the plan to charge the cost of the hospital work back upon the department from which that work originated. This is done on the theory that if a machine or tool breaks the repairs are charged up to the shop where the break occurs. This being so then why not, if an employee is injured and needs "repairing" charge that up to the shop wherein the injury was received? In theory this sounds good, in practice

we do not believe it to be so good. Our aim has been to have *every* employee report *at once* to the hospital for *every* injury, no matter how small that injury. By doing this we have been able to keep down our re-dressings as already shown and reduced our lost time accidents as will be shown. We do not think it probable that a foreman, if he knew the cost was to be charged up against his department, would be so willing to send all of the little injuries to us. Would he not be very apt to say, "Oh! that isn't worth bothering with, never mind it?" Of course he would. "He is being continually admonished to keep his costs down and quite naturally he would take this method as one to help him accomplish such an end. Believing this to be true we have thought it advisable not to put this obstacle in the way of having the employees come to us. The entire work of our department is borne as a departmental expense, as is also that of the Compensation Department. We believe that rather than put any obstacle in the way of a full and free cooperation on the part of the foremen and heads of the departments, we should do everything possible to encourage such a relationship.

*f. As a production factor.*—As a "production factor" we do not mean to intimate or infer that we go out into the factory and help run the machines or inspect the parts. Nevertheless, by keeping the men on the job or restoring them to their jobs at

the earliest possible moment after an injury, we certainly do enter in as a "production factor" and one of no small importance at that. To what extent does a Medical Department in industry discharge their obligations on this point? We will answer this by quoting from our own record. We have already told you that during the year 1920 we cared for 13,456 new injuries, and of course every new injury is a potential time loser. As a matter of fact, however, out of our 13,456 new injuries, there were only 245 that were actually time losers and only 112 of these lost sufficient time to become compensation cases,—which means the loss of seven days or more. In other words, only 1.82 per cent of our injured employees were compelled to lose any time at all on account of their injuries and only 0.83 per cent lost as much as seven days. Since the installation of a full-time physician in charge of our medical work, the lost time accidents have been reduced 81 per cent and our compensation rate has been reduced 60 per cent. Is this not rather convincing evidence that a Medical Department is a factor in keeping up production? Would it not appear that such a Department is worth while in industry?

#### Future of the Service

Industrial medicine is no longer in its infancy, although it is not yet full grown. It has proved itself to be as much a "specialty" in the field of medicine as are the various other specialties that have gone before it. It has proved also, that it really has a place in the industrial field. The old time company doctor, with his limited vision and often crude methods, has been replaced by the industrial physician with his ever broadening vision and up-to-the-minute methods. The curative phase of the work is giving way to the preventive. Every Industrial Medical Department is, or should be, a community health center in the largest meaning of that term. The lessons in sanitation and hygiene taught here are carried into the homes and must in turn, affect the life and health of the entire community. By keeping the workingman or woman healthy and happy on the job, the same health and spirits will radiate outside and make for better contentment and better citizenship. By eliminating to a large extent, the industrial human scrap heap, finding a job that even the lame, the halt or the blind can fill, poverty and dependence will be that much lessened. By reducing the stupendous sum represented by lost time on the part of

injured employees and the consequent loss in production, this sum having to be added to the cost of production, and this in turn to the cost of living,—by reducing this, the buying power of the dollar is that much increased and the cost of living is correspondingly decreased. By all these means and more besides, the Medical Depart-

ment in Industry has proven its worth in the past. By continuing along the same lines it will, in the future, be more and more recognized as a source of help and benefit to the individual, a department of indisputable worth to industry and a power for good to the whole community. Through service it has won its place,

by continued service it shall not only maintain that place but go forward to an even larger one. Its future is assured,—let us who are engaged in the work, or those who may take up the work, never lose our visions of what that future should be nor fall short of our best efforts to attain that goal.

## Flat Foot as a Problem of Industrial Surgery

### Concomitant Predisposing Constitutional Conditions Are Always to Be Looked For

By R. B. BETTMAN, M.D., CHICAGO, ILLINOIS

THE weak foot is a disability which greatly handicaps a large class of workmen, and may completely incapacitate a few. Much can be done by the industrial surgeon to alleviate this condition and at the same time keep the worker on the pay roll.

#### "Flat Foot" a Misnomer

The weak foot, or flat foot, or "falling arch"—both of these terms being misnomers—occurs in workers who stand at their work for long hours, or who walk continually on hard factory floors. It is apt to be a disease of the new employee, of the worker who is transferred from a sedentary job to one requiring much standing or walking. Besides the etiological factor of "being on one's feet continuously" other factors enter. The employee who is in a run down condition, who is convalescent from a recent illness, who is suffering from some other ailment, such as a chronic sinusitis, a gonorrhea, or a furunculosis, is more prone to develop a weak foot.

An expedient prophylactic measure is to prevent an employee who has just returned to work following a more or less protracted illness from being placed on a job requiring "being continuously on the feet." If it is not possible to place the workmen on a job requiring alternately a sedentary and ambulatory position, it is well to put him first on shorter hours, gradually increasing to full time. It is better for him to keep working, even at a reduced wage for a short time than to follow a course which may mean complete incapacity later on. A man with an infection who is in a "continuously on the feet" job should be cautioned to rest whenever possible.

Workers' shoes should receive especial attention. However, the physi-

cian is apt to find that all his logical reasonings sound a very feeble remonstrance compared to the clarion decree of style. The male worker needs to be cautioned as regards the wearing of oversize shoes or tennis sneakers. It was found expedient in the army to lay much stress on the shoes of the soldier. Might it not be well to devote a little more time to the feet of our industrial soldiery?

The symptomatology of weak foot is varied. In only a certain percentage are the pain and discomfort localized in the arch. In many instances not even pain or tenderness of the muscles of the legs or thighs are the outspoken symptoms. General lassi-

tude, vague pains in the back, exhaustion towards the end of the day's work may be the direct symptoms of a weak foot, in such cases the diagnosis can only be made by the process of exclusion. Examination of the foot itself may show nothing. The character of the walk is more apt to be the earliest clue. The patient may walk "stiff footed." Some overcome the weakness in the foot by voluntarily throwing the weight on the outer side of the shoe, and walk pigeon-toed. This is a self-learned remedy and a good one. One should not, of course, attempt to correct a "pigeon-toed walk" acquired for the sake of resting the foot until the foot is really strengthened. A more common walk will be the walk with the foot rotated outward, the splay foot walk. Here the patient tries to overcome the effort of rising on the ball of his foot by pushing himself along much as one does on skates. A series of sprained ankles arouses suspicions of a weak foot. It is commonly known that the actual amount of flattening of the arch has but slight relation to the amount of physical discomfort. A slight tendency to evert the foot while standing, an outward curving of the Achilles tendon are early signs of a weakened foot.

#### Corrective Measures Used

The urgent problem in such conditions is what to do to overcome the condition and still keep the worker on the payroll. Obviously, when the condition is the result of occupation, change of employment is initiated where possible. A man who has developed a weak foot from standing will often be relieved if the change is only to a walking job, though it may be necessary to reduce the working hours, or to shift the handicapped worker to a sedentary post. The im-



A pronounced case of so-called second degree flat foot. The transverse arch is almost obliterated. The patient is in a typical walking attitude, the feet rotated outward.



A boy convalescing from an acute infectious disease. He has weak feet and of his own accord has shifted his weight to the outer side of the feet, walking "pigeon-toed." To correct him of this method of walking would precipitate symptoms of "flat foot." As he becomes stronger he will spontaneously resume his former step.

provement of the patient's general physical condition is of prime importance. Here the social worker, provided the factory has a social service department, will be of the greatest aid to the industrial surgeon. The shoes should receive attention. Adhesive strapping should be tried as a temporary measure which will often do much to tide over the case until a betterment in the general physical condition will result in a spontaneous strengthening of the ankle. A simple strapping is more efficacious than a heavy complicated one. The foot should be strapped in a position of inversion, at right angle to the leg.

Exercises usually are relied upon, and justly so, to strengthen the muscular support of the ankle. However the average worker will not take kindly to a set of gymnastics. He must get up early as it is and will begrudge an extra five or ten minutes for the sake of uninteresting calisthenics. During the day he has no time for a set of exercises and at night he is too tired and in such a condition exercises do more harm than good. However, in spite of these facts, provided he can be made to see the importance of such a procedure the worker can be taught a few simple maneuvers which will exercise the muscles of support and which he

can carry out while at work. He is instructed to rise up on his toes now and then during the day. While at work, he can at intervals invert and straighten his foot. If he is standing, this means rising on the outer border of his foot. It is well to instruct him to walk "pigeon-toed" from time to time. This will not only tend to overcome the vicious habit of abducting the foot, but, by throwing the weight on the outer border, will also rest the foot.

The efficacy of "arch supports" to be put in the shoes is a moot question. Unscientific or not, in my experience arch supports have in many instances given great relief and, if so, the patient should be allowed to wear them. It should, however, be impressed upon the patient that the support is but a temporary measure, to be used in conjunction with other treatment and not to the exclusion of corrective exercises. The supports at first may be worn continuously. As soon as possible they should be worn only at intervals when the patient is tired, during periods of special stress, etc. It is well to use the arch supports in the evening when the patient returns from work. The habit of taking off the shoes and walking about the house in loose slippers, moccasins or stocking feet, is a bad one. The tired foot needs support. It is a natural desire to get out of the heavy working shoes as soon as possible. By bandaging the arch support to his foot and then putting on his slippers, the worker can best obtain rest.



A simple corrective exercise, easily employed, is achieved by standing on the toes now and then during the day.



Discomfort from weak feet may be relieved by throwing the weight on the outer border of the feet. A third exercise is a combination of the exercises shown, the patient standing on the toes, rolling back to the outside of the feet.

The question of shoes as I have said is an important one, and a difficult one for the industrial surgeon. A shoe which will not crowd the toes, which will be long enough, which will have a broad firm heel to support the weight, is apt to be not in "style." The decrees of fashion are not lightly put aside. Occasionally a worker will be found who can be induced to wear the proper shoes.

A shoe which even approaches the sensible type can be built up on the inner margin and this may be entirely sufficient to relieve the patient of all symptoms. The shoe worn by the average male worker is adapted to this modification. A shoe with a high French heel cannot be altered to cause inversion without greatly increasing its instability. Soaking in hot salt water, just before retiring will give great relief for aching feet.

Calluses on the sole of the foot are frequently concomitant symptoms of weak foot. Aiding the weak foot will in a large percentage of cases cure the calluses. A persistent metatarsalgia will often respond to the weak foot treatment. A plate with a support for the transverse arch is frequently indicated.

Emphasis should be laid on the fact that the building up of the general physical condition is the most important therapeutical procedure. It might be well to suggest in closing that a painful arch may often respond to treatment with a tonsil snare, a dentist's drill, or an urethral sound.

# Industrial Nurses in New England

BY EVELYN L. COOLIDGE, R.N., PRESIDENT, NEW ENGLAND  
INDUSTRIAL NURSES ASSOCIATION, BOSTON, MASS.

THE New England Industrial Nurses Association was organized in 1915 with eleven charter members, all of them graduate nurses employed in various factories and mercantile establishments in and around Boston, and was, as far as we know, the first such organization in existence. The meetings are held the second Saturday in each month from October to June, inclusive, at 7 p.m., at 3 Joy St., Boston, Mass. At first these meetings were held in the office of the Boston Tuberculosis Association, but this room was soon outgrown, and the use of the Town Room Library, in the same building, was given to the Association at a nominal rental. This room is still being used, but with the continued growth of the Association a larger hall will soon be necessary. The Association has grown rapidly and now numbers more than two hundred members, representing all the New England states, as well as New York, Tennessee, Colorado, and New Brunswick. The firms at a distance from Boston employing nurses who are members, invariably pay the traveling expenses of their nurses in order that they may attend the meetings frequently, as the employers realize the mutual benefit derived from attendance at these conferences.

The first hour of the meeting is devoted to the discussion of problems, often following ten-minute papers by members on various phases of their work. The second hour is given over to speakers of authority on subjects relating to industrial betterment, after which time is given for questions. Absent members send in questions which are discussed at the meetings, the result of the discussion being included in the full report of the meeting sent to all members each month.

Addresses have been made before the Association of Labor Laws, Workman's Compensation, State Health and Relief Agencies, Food and Bad Working Conditions (illustrated with slides), Vocational Rehabilitation of the Injured in Industry, Relation of the Medical Department to Industry, Nutrition in Industry, Organization of the Medical Department, Records, Value of Absentee Visiting, The Medical Department from the Workman's Viewpoint, Mental Hygiene in Industry, and many other subjects of interest and value to the industrial nurse.

The annual meeting is held the

second Saturday in January, at which time the officers for the ensuing year are elected. The present officers are as follows: President, Miss Evelyn L. Collidge, R.N., Lever Brothers Company, Cambridge, Mass.; first vice-president, Miss Elizabeth Whitty, R.N., Texas Company, Providence, R. I.; second vice-president, Miss Elizabeth Kob, R.N., Hockanum Mills, Rockville, Conn.; recording secretary, Mrs. Louise H. Munro, R.N., Holtzer Cabot Company, Roxbury, Mass.; corresponding secretary, Miss Henrietta G. Lawrence, R.N., Simplex Electric Heating Company, Cambridge, Mass.; treasurer, Miss Florence L. Berry, R.N., Florence Manufacturing Company, Florence, Mass.

The Association endeavors to maintain a high standard in the industrial nursing field. A nurse in good standing, who is a graduate of a recognized training school and who is employed by a corporation or by an individual in the interest of his employees, is eligible for membership. Associate members are graduates in good standing from a recognized training school who are doing part time factory work, or supervisors of such nurses. The honorary members at present include: Mrs. Anne M. Staebler, R.N., executive secretary, Massachusetts Health in Industry Committee, through whose interest and efforts the Association was organized, who is honorary president, having served two years as president; Florence S. Wright, R.N., deceased, author of "Industrial Nursing"; and Mrs. Austin T. Levy, lay member of the Industrial Section of the National Organization for Public Health Nursing. The Association has representation on the Board of Directors of the Industrial Section of the National Organization for Public Health Nursing.

The Association desires to bring before the general public, especially the employer of labor, the fact that the graduate nurse in industry, trained for that particular field of nursing, is a distinct economic asset, in that she not only cares for the sick and injured in the plant, thus keeping them on the job, but teaches them all, executives as well as employees, how to *keep* well. The nurse has a distinct function in fostering the spirit of cooperation in measures looking toward community health and, if her activities take her to the workers' homes, she may render a greatly broadened service.

## Canada Reports an Industrial Fatigue

A recent report of the Committee on Industrial Fatigue of the Council for Scientific and Industrial Research of the Dominion of Canada is on General Conditions of Industrial Hygiene in Toronto. Seventy-six plants in Toronto were studied and the report includes a summary of conditions as to hours of work, medical service, sanitation, fatigue, occupational diseases and welfare. A large part of the report is taken up with a discussion of the time lost from sickness.

Eight benefit associations in Toronto were studied and their statistics and the lost time from sickness were tabulated for the year 1919. Charts and tables are presented which are extremely significant in view of the scarcity of accurate statistical material on this subject.

The Committee has presented the whole subject of industrial hygiene to the chief plants in Toronto and its plan for the future is to undertake "some specific piece of research from which definite conclusions can be drawn on some concrete problem however small."

## Pleasing Health Propaganda

The most delightful piece of health propaganda published in recent years is the *Health Mother Goose* gotten out by the Metropolitan Life Insurance Company, written by Elizabeth E. Watson and illustrated by Emma Clark. Any child and any grown-up who love Mother Goose as all children and all grown-ups should, will find this newest Mother Goose a joy.

If all health propaganda could be as simple and straightforward in going to the heart of things, we should have a healthier, happier people. Mother Goose jingles should never be separated from their illustrations and Miss Clark's illustrations are as satisfactory and instructive as one could wish, but even without pictures, Miss Watson has succeeded in keeping the Mother Goose spirit.

There was a man in our town;  
He was a Doctor Wise,  
Who wanted folks to keep quite well  
And so he did advise  
Fresh air, good food, and lots of sleep  
With merry times each day,  
And all the folks who followed him  
Were happy, well and gay.

Jack Sprat was strong and fat,  
For he drank milk and cream;  
Ate vegetables and lots of bread,  
And left his plate quite clean.



# The Routine Physical Examination of the Worker

Its Individual Value Depends on the Physician;  
Its Public Health Value on the Management.

BY CHARLES K. ERVIN, M.D., CINCINNATI MILLING MACHINE COMPANY, CINCINNATI, O.

**P**HYSICAL examination of workers, although carried on by some plants as early as 1900, received its greatest impetus during the war. Necessary as it was before, its importance became emphasized, as great numbers of the physically fit were in the army, and industry had to use such labor as was then available. The physical examination at this time enabled the employment manager to place those physically handicapped at jobs they were capable of performing.

Some of the plants, which engaged in this work early, did so because of the interpretations placed upon workmen's compensation laws in certain states. Now, however, they realize the advantages to be gained in a new production program.

This subject divides itself into two heads, differentiating only as to the time: (1) Examination at time of employment; and (2) periodic physical examination. After all, there should be only one kind of physical examination, and that is a thorough and complete one, made with the utmost care and embracing everything from the top of the head to the sole of the foot.

## Features of Examining Room

The examining room or rooms should be apart from the treatment rooms. Men like privacy and their wishes should be respected. Some intimate questions are asked; they disclose professional secrets, and the industrial physician will elicit only such answers as the degree of privacy affords,—just that much and no more.

The room should be well lighted, well ventilated, and, above all, should be free from noise. It should be equipped with all necessary instruments for nose, throat, ear, teeth, eye, and all special examinations, including x-ray apparatus. Either in this room or connected with it, there should be a well equipped laboratory.

It is not necessary that this room be set aside exclusively for physical examinations. It may be used every day for special examinations of eyes, ears, throat, chest, or heart.

When the author of this article had finished his internship in one of the large hospitals and was on the eve

of starting into general practice, a well known physician of this city offered this advice: "Make a thorough, complete, physical examination of every patient who comes into your office. This is the secret of becoming a good physician."

This advice, coming from one who had experienced years of success, seems worth following. It applies to the examination of the worker at any time, and particularly at the time of employment.

It requires time to do this, but any other kind of an examination is worthless. Don't try to beguile yourself or the management into the belief that it takes a physician to discern a missing arm or an eye and that in so doing you are better able to place the man. Any good employment manager could do the same.

It does, however, require a physician to detect a diseased eye, a chest condition, a heart lesion, a nephritis, a hernia, or any of the many diseases to which man is susceptible. These are the things you can only discern by the proper kind of an examination.

At railroad terminals a thorough inspection of the train is made. If one wheel is overlooked, it may be faulty and cause the fatal wreck. The same careful inspection should apply to the human element in industry.

## Mental Attitude Counts

First impressions should always be good and there is no better opportunity for good psychology than at this first examination. It is the first contact the new man has with the firm. Your thoroughness, your care in handling him, privacy, and the taking of sufficient time to gather complete data, all make a lasting impression.

An examination can be made without undue exposure. Few men object to exposure to the waist line. A sheet or blanket can be used for the timid.

In the examination of the heart and lungs of women workers, clothing should be removed to the waist line and a sheet 3x5 feet, slit to the center, always used. This should be done by a lady attendant, if the physician doing the examining is not a woman.

Do not deceive yourself or try to

persuade the worker into the belief that you have examined his or her heart and lungs unless you have seen the chest in action. An eye well trained in the powers of observation will often reveal as much as the stethoscope.

To make a complete examination, it is best to have a certain method of routine, which will enable rapid procedure but assure that no detail is overlooked, and provides a record for future reference.

The following routine has been found the most successful for a general examination; special conditions, such as tuberculosis, or any condition involving the special senses, requiring a chart with more detail:

Age..... Weight.....  
Weight one year ago, ..... Best weight and when, .....  
Height .....  
Family History: Father, mother, sisters, brothers.  
Previous Personal History: Occurrence of measles, flu, and time confined to house, pneumonia, rheumatism, colds, tonsillitis, grip, constipation, epilepsy, scarlet fever, tuberculosis.  
Previous injury, sickness due to industry.  
Venereal History .....  
Eyes: Visual acuity, right and left, both with and without glasses.  
Ears: Condition of drum, right and left, history of discharge from ear.  
Hearing—watch test.  
Nose: Septum, turbinates, obstruction.  
Mouth: Tongue, condition of gums, pyorrhea.  
Speech—impediment.  
Throat: Tonsils, pharynx.  
Teeth. (This record should be on a numbered chart.)  
Right 8 7 6 5 4 3 2 1  
8 7 6 5 4 3 2 1  
1 2 3 4 5 6 7 8 Left  
1 2 3 4 5 6 7 8  
Number missing, crowns, bridge, fillings, snags. It is only by the use of such a chart you can gain an idea of the masticating efficiency.  
Thyroid (special attention).  
Glands of the neck. While palpating these glands, examine for pediculosis without the knowledge of the applicant.  
Heart. Position of apex in reference to mid-sternal line and intercostal space.  
Lungs.  
Chest: Development, expansion uniformity, etc.



Abdomen, liver, spleen, stomach, bowels, scars on abdominal wall, their condition and history.

Hernia: Inguinal, complete, incomplete, size of external ring. Special attention to impulse, femoral, ventral, umbilical, postoperative.

Hemorrhoids, fissures, fistula.

Genitals: (Varicocele, hydrocele, note size); scars, undescended testicle.

Skin: Eruptions, dryness, acne.

Limbs: Conformation, deformities, contractures, varicose veins, joint motility.

Hands: Deformities, motility.....

Spine deformities, motility.....

Nervous System: Tremors, knee reflex, Romberg and Babinski signs, seizures, evidence of scars on face or tongue.

Arteries: Condition of.....

Pulse: Standing and sitting; variability; regularity.

Blood Pressure. This should be taken in every case.

Urinalysis: Chemical in every case, microscopic where indicated. No examination is complete without it.

### Psychological Tests

While talking with the applicant during the examination, the physician in industry, if he has properly trained himself, can secure a fair estimate of the man's mental condition. He can secure a fair idea of the applicant's general intelligence. He can detect mental defectives and can secure the man's mental attitude toward industry, number of previous positions held and attitude toward them, as well as the applicant's general outlook on life.

It has been my good fortune in the army to work in a team of examiners where we examined thousands of men, in which work scores of mental defectives, epileptics, morons, and numbers of those unfit, were picked out after a two minute examination.

Special examinations, such as a Wassermann, blood examination, and bacteriological tests should be made in special cases, either in the shop laboratory or referred to someone doing that specific work.

A physical examination conducted in this manner will enable the industrial physician to safeguard health and thus maintain efficiency at a maximum. It places him in a position (1) to exclude communicable diseases; (2) it enables him to place the physically handicapped; (3) to discover remedial defects which, when corrected, increase efficiency and prolong life; (4) to secure a complete history of the man's condition when beginning work. This is a very necessary thing in case a man later contends his work interferes with his health or that he is losing weight. Or it may clear his mind of a delusion when he can be shown that he is in as good

condition and in many cases better than when beginning work. In case a man has a single hernia and develops one on the other side, protection is afforded by the knowledge of the condition of the ring on the latter side at the time of employment. (5) It enables the exclusion of those who, because of some gross defect, are unfitted for employment. (6) From a humanitarian viewpoint it thereby becomes possible to place those needing medical attention, whether disqualified or hired, in the hands of the best physicians, the best hospitals, and the best sanatoriums.

### Periodic Physical Examination

In considering the dangerous processes to which workers are exposed in many industries, the periodic physical examination becomes as important as the examination at the time of employment. Occupational diseases are receiving more attention now than ever before and it is only by this frequent examination that we will be able to locate the department in which they occur and institute proper preventive measures. Other advantages are: (1) It affords the means of following up those with known disability. (2) The requirement of frequent examinations is a safeguard where there is handling of food. (3) Comparison can be made of the physical status of the employees from time to time, with the object of increasing the health standard of the entire force. (4) Employees returning after an illness have the advantage of receiving a physical examination. (5) Safety is promoted by periodic examination of everyone where a known health hazard exists. (6) In the event of placing at work an applicant whose health status is somewhat uncertain, frequent examination furnishes the necessary follow-up. (7) All executives and office employees need the frequent examination more often than the workmen. They lead a sedentary life. It is on the executives that responsibility rests. They are hard to replace and if sickness comes, the loss to the firm is multiplied several times, and here the value of periodic physical examination proves its value.

After completion of the examination, unless records are convenient and readily available, the efforts of the physician are partly wasted. This record can readily be kept on a 5x8 card or on a double card, using four sides.

The physical examination records should be filed separate from other papers and should be in the treatment rooms, readily available when the em-

ployee presents himself at the clinic for minor ailments. The records should be indexed according to department and cross-indexed as to occupations, age groups, and according to defects detected. In the file, at the beginning of each group or department, should be a description of the department, the location, the kind of work, sitting or standing, or heavy lifting. It should be complete and concise enough to give the physician a good conception of the kind of work the employee is to do.

An ideal system for handling physical examination records can be worked out with one of the standard visible card systems which reveal by one glance at the record a mental picture of the physical condition of the entire department. By means of different signals, the more pronounced physical defects or diseases that have been found can be brought out.

With these histories conveniently at hand, they will receive attention more often than when in a folder with numerous other cards and all placed in another room.

Standardization and efficiency is stressed in all our manufacturing output, yet usually the methods of keeping physicians' records are most crude.

It is to be remembered that in making a physical examination the industrial physician serves the employees and in serving them well renders the management the highest degree of service.

If physical examinations are conducted with the needs of the employee ever in mind, there can be no objection to them on the part of the men. The greatest cause for complaint in the past has been because of the great number of rejections, which have been as high as 10 and 15 per cent in some cases. In a recent report, it is encouraging to note that the average proportion of rejections is only 2.8 per cent. It also shows that of those accepted for employment, 30.3 per cent were substandard. One firm reporting gives the rejections as low as one-half of 1 per cent. Our own rejections were 1½ per cent. This record shows that the handicapped are being placed and that probably the only time there is a rejection is when the man would become a danger to himself, to others, or to property.

(1) Anything but a complete and careful physical examination is a useless waste of time and energy. This idea should be thoroughly sold to the management.

(2) Proper filing of the record is

called for so that the physical findings are readily available to the physician when the employee presents himself in the clinic for minor ailments. This will always give the physician a proper background in his subsequent examinations of the patient when presenting his complaints, offering the opportunity also of making notations on the original card as to variation in weight, in physical well being, etc.

(3) The use of former records of this type before prescribing will impress the employee with the thoroughness and the intelligence of the method and the worthwhileness of the original examination.

(4) Few examiners realize that the reaction of the patient to the examination and the type of answers that he gives, is perhaps the most valuable index that the employer can pos-

sibly get as to the desirability of the applicant for the job. The physician should so train himself that the employee's reaction to a good physical examination will largely take the place of specific mental tests, which are, in the main, impracticable as applied to industrial workers at large.

(5) A true test as to whether the physician is holding his own with the employees and with the employer is indicated by the attitude of the executives toward having physical examinations made of themselves. The employer and the industrial physician should more thoroughly appreciate that in no better way can the company dignify the service offered by the Medical Department than by having the employees see that the executives so value the medical service that they themselves may use it, and thus give it the stamp of approval.

## British Industrial Medicine

BY OUR LONDON CORRESPONDENT

AS PRESIDENT of the Industrial Welfare Society, the Duke of York opened on June 2, last, a conference of medical practitioners engaged in industrial work, at the headquarters of the Society at 51 Palace Street, Westminster, London. Dr. R. M. Wilson introduced a discussion on "Medical Service Industry" and said that every big employer who had done any good in the world knew that there was never any profit in underpaying workmen. The healthier the workman and the better his surroundings; the more cheerful he was, and the greater would be his actual output; and, if the employer had listened to the factory inspectors and doctors, the trouble between labor and capital would have been healed years ago. If medical men showed employers and employees that a particular thing, such as bad industrial conditions, was against the interests of both, they would remove the basis of their quarrel and raise disputes to another level. The fundamental doctrine of industrial medicine was that there was no disparity of interest between employer and employee. What helped the one was bound to help the other. Doctors were not tradesmen, they were not there merely to make money, a fact which gave them an enormous advantage. Sir Ronald Ross, for instance, who had made many millions for the capitalists, who had opened the door of the East to the British Empire, and who had made

malarial countries habitable to the white man, has received nothing, relatively speaking. Yet he, the speaker, would not change the position of Ronald Ross for one of the capitalists who had made fortunes. The medical profession should have a preventive outlook and adopt the "Mackenzie line of thought." Actual disease was an evil process and we must study the processes which led up to it. For successful factory work in medicine they must have a general practitioner who went right down to the humanity of the men or women. Specialists who might be inclined to look at their patients as No. 1, No. 2, and so on, would never be of much good to the British public.

### Welfare Based on Medicine

Dr. I. M. Legge, of the House office, laid stress on the point that all industrial welfare must be based on medicine. The movement for industrial "doctors" was only in its infancy. He would like to put some questions to the meeting. What was the relation of "the works doctor" to the panel doctor, to the edifying factory surgeon, to the welfare superintendent, and to the Whitley Councils? Could they have a panel of works doctors, or could part time industrial work be linked up with the panel system? Were there clinics established in the works, ophthalmic, dental, etc.? Could they show to the employer results in pounds, shillings, and pence

from industrial medicine? They were committed to the insurance system for weal or for woe. Medical examination of the employees by the firm's doctors was not feasible but might be done by state doctors, as under the panel system. In the United States they had no insurance system to retard the spread of industrial medicine.

Dr. E. E. Mather stated that he and a woman doctor worked "whole time" for the Messrs. Cadbury. There were about nine thousand employees, one thousand being under sixteen. They treated all who came for treatment,—men, women, and children,—and had no difficulty with the panel doctors. They had a dental clinic and the firm paid for special cases to be sent to hospitals and consultants. The medical examination of existing employees was optional, but the examination of applicants was compulsory.

At the afternoon session Dr. E. L. Collis, professor of preventive medicine at the University of Cardiff, spoke on "Health Problems in Industry" and said in part that he was convinced there was a very close connection between industrial unrest and the public health. If the nation was sound, the nation would think soundly. The medical profession had in its hands the foundation and the basis of the whole structure of civilization. It was not enough for the doctor to wait until the individual in the factory was ill; he should see what could be done to prevent illness.

### Cost of Adequate Service

What was going to be the cost and value of an adequate medical service to industry? It was demonstrable that labor turnover cost the country \$500,000,000 a year; but labor turnover could be reduced 70 per cent by medical supervision—which meant a saving of \$350,000,000. Add to this the saving that could be effected on lost time and convalescence, and the medical profession could offer industry \$750,000,000 a year. Even if half of the forty thousand doctors in the country were paid \$10,000 a year each by industry, there would still be a saving of over \$500,000,000.

Dr. W. W. Renton, who had worked for the firm of Vickers, said that this firm had a hospital and special clinics for electro-therapeutics, massage, etc., and that insurance companies sent patients for treatment. Dr. D. A. Coles acted as "works doctor" for the Gas Light and Coke Company. He was not on the panel himself and had no trouble with the panel practitioners. Mr. Seeborn Rowntree, cocoa and chocolate manufacturer, said that the

firm had fifteen years experience of medical work in industry, and there was no question as to its value. What was wanted was an educational campaign among employees to prove to them that under existing figures a medical service paid. But the cost was extremely small in relation to the wages bill. His own firm had spent \$10,000 a year, with a wages bill of \$6,250,000. There was no capital outlay required—only three or four hundred pounds for a small consulting room and a few appliances. Dr. Cree of Messrs. Swan & Hunter, the Newcastle shipbuilders, said he encouraged men to come to the ambulance room for the smallest injuries, and as a result sepsis—which was formerly very common owing to the dirty nature of the work—had been eliminated entirely. This represented a great saving. Sir Thomas Oliver, M.D., pointed out as a pounds, shillings, and pence gain that the match industry was now free from jaw and dental trouble. He thought there

should be a state department for industrial medicine as in France and in the United States. As showing the interest now being taken in industrial medicine in Great Britain at the present time, in the *Lancet* of June 11, a leading article was devoted to the subject. In this article emphasis is placed upon the fact that industrial medicine must not be made into another "close" specialism and it is obvious that if the general practitioner is to acquire a preventive outlook, he must have the opportunity for studying the effect on his patient of both home and occupational conditions. In order to insure the maximum of good health among workers, home, factory, and workshop conditions must be of a high sanitary and hygienic order. By promoting this object much ill-health will be prevented and efficiency increased. Naturally, prosperity and comfort will follow. Industrial medicine has a great future, and it the most essential factor in the prevention of disease.

## Respiration and Physical Fitness

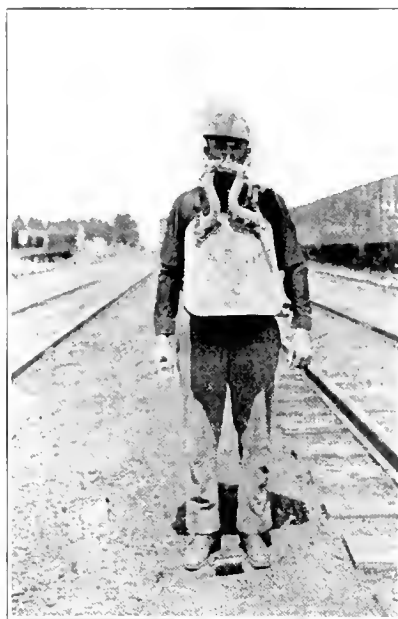
NOWHERE has physiological knowledge been placed to better practical uses than with regard to the principles of respiration. A study of the absorption of gases by the blood has made caisson disease a curable malady and has furnished the fundamental principles upon which the construction of mine rescue apparatus is based.

Formerly in the event of mine accidents, volunteers were always ready to risk their lives in the attempt to rescue men imprisoned in the poisoned atmosphere of the shafts, and many needless sacrifices of life were thus made. Now it is realized that no one should attempt such rescue work unless he is physically fit, and unless he is properly protected with apparatus against the poisonous atmosphere he must enter.

In the Second Report of the Mines Rescue Apparatus Committee, Department of Scientific and Industrial Research (England), 1920, is to be found a remarkable summary of the processes of respiration. The way in which the pressure of carbon dioxide in the blood acts independently of the oxygen pressure is emphasized, and attention is drawn to the different and independent action of oxygen-want and carbon dioxide excess in stimulating respiration.

In analyzing the Report, the *Lancet* quotes evidence (1) to show that while in an ordinary person diffusion

of gases through the pulmonary epithelium will explain the access of oxygen to the blood, "the physical laws of diffusion do not explain the phenomena of blood-oxygenation when the subject is making a special demand on the oxygen supply," either because he is doing physical work or because, as airman or mountaineer, he is breathing rarified air; and (2)



Front view of Paul apparatus as used in mine rescue work by the Colorado Fuel & Iron Company. No man may undertake rescue work who is not suitably protected against the dangers he must face.



Rear View Paul Apparatus. The air the man breathes is carried with him.

in support of "the view that the epithelium is not a mere porous diaphragm, but that living cells of which it is possessed have the faculty—which they exercise at need—of secreting oxygen from the air and of handing it forward at enhanced pressure to the blood."

Men in good physical training, such as practical miners, were found to possess this power of secreting oxygen from the air.

Hence, in men who are accustomed to muscular exertion, there is no deficiency of oxygen in the arterial blood when ordinary air is breathed until exertion is pushed to the utmost. For this reason they also receive no benefit from breathing air enriched with oxygen. On the other hand, in men who are not accustomed to muscular exertion, the epithelium fails to pass in the proper supply of oxygen unless the diffusion pressure of oxygen is raised in the alveolar air by the enriched inspired air. Hence these persons benefit by enrichment of the air with oxygen. . . . It is evident that the physiological response of a man to oxygen during muscular exertion furnishes an interesting test of whether or not he is in good training as regards his lungs. Physiological fitness depends not only on the lungs, but also on ready adaptation of the circulation, muscles, nervous system, etc., to whatever exertions are required. . . . In ordinary cases, however, lung fitness is an accompaniment of general physical fitness, and may therefore be taken as a measure of it.

It may be inferred from this that the method of testing physical fitness of airmen devised by Dr. J. S. Haldane should also be applicable to members of a mine rescue brigade, or to the capacity of athletes to endure the strain of strenuous and prolonged



The stringent requirements of rescue apparatus are based on physiological principles. Proto Fleuss apparatus.

exertion in contests. The thought further suggests itself that by the same means might be determined the most economical speed possible per liter of oxygen or per pound of food. The investigation revealed that when carrying a load of forty-three pounds—the weight of a rescue apparatus—the most economical speed for certain subjects was three miles for some subjects and four miles for others. Further valuable results are to be expected from research in the same direction. Protection for the safety squad and perfect adaptation of apparatus should grow out of these studies.



Effective protection is afforded by the apparatus which carries in one cylinder a supply of oxygen, and in the other caustic potash which absorbs the carbon dioxide exhaled.

### Dr. Lanza Goes to Australia

The newly constituted Board of Health of Australia will undertake research along lines having to do especially with hygiene in industry preliminary to the enactment of health measures of far reaching influence. It is interesting to note that an American physician has been selected to head the Hygiene Section, in Dr. Anthony J. Lanza, who has been with the Hydraulic Pressed Steel Company, Cleveland, O., for the two years just passed. Dr. Lanza is by education and experience fitted for the important post he has undertaken to fill, having had immediate experience in industrial plants, and having been in charge of the Office of Industrial Hygiene and Medicine of the United States Public Health Service in Pittsburgh for some years. He sailed July 9, to assume charge of important new investigations.



Dr. Anthony J. Lanza appointed on Australian Board of Health.

## Recent Compensation Decisions

**F**RANCO et al. vs. Seas Shipping Corporation, Inc., which was decided by the Federal District Court of Nebraska, April 15, 1921, interprets Congressional Act of December 26, 1920, providing that alien seamen found to be afflicted with certain diseases shall be placed in a hospital, the expenses involved to be borne by the ship owner and not to be deducted from the seamen's wages. The Court held that this Act is not limited to passenger vessels and that while without explanation it may seem unfair to impose on ship owners the duty of paying hospital bills to cure seamen of diseases due to their own vices, the Court will not substitute its own judgment for that of Congress. The case arose in admiralty where alien seamen employed on crew of an American steam freighter on arrival in the United States were found to be suffering from venereal diseases. They were ordered to a hospital and treated under the Act of December 26, 1920. On discharge they demanded full wages, the ship insisting on the right to deduct the amount of the hospital bills, its contention being overruled.—272 Fed. 542.

**T**HE following cases interpreting the workmen's compensation laws of the various states turn upon or involve upon some medical problem or some question of physical conditions as opposed to the ordinary problem of statutory interpretation or

legal analysis. There is involved here possibly a question of the determination of the fact of physical disability based upon medical evidence or opinion and very frequently there will be holdings on either side, both pro and con in the different jurisdictions showing in a way the lack of standardization, the state of indecision concerning the judicial determination of medical problem, if such a term can be used.

The case of Strong vs. Sonken-Galamba Iron & Metal Co. was decided by the Superior Court of Kansas May 7, 1921, where an injured employee refused to submit to an operation for a hernia. It was held that the unreasonable refusal of an injured employee to permit a surgical operation where the danger to life from the operation would be very small and the probabilities of a permanent cure very large, justifies the Court in refusing compensation under the Compensation Law from and after the trial. The unreasonableness of this refusal is a question of fact to be determined from the evidence.—198 Pac. 82.

**A**N INTERPRETATION of the Oklahoma Workmen's Compensation law held that the law was for the benefit of the injured employee to provide for him proper medical and surgical treatment at the expense of the employer, in addition to the compensation provided for in the Act, which results from injuries arising in the course of employment.

The State Industrial Board is without jurisdiction to order the injured employee to submit to a major operation involving a risk of life, no matter how slight, in order that the pecuniary obligations created by law in his favor against his employer may be minimized. An award of the State Industrial Commission in case of injury resulting in hernia which required the claimant to undergo an operation or forfeit his right to compensation was held to be in error. The rule stated is that the Industrial Commission must award compensation for the disability of an injured employee as it exists at the time of making the award, and the Commission is without jurisdiction to impose upon such injured employee the option of submitting to a major operation or forfeiting his right to compensation.—*Henley v. Oklahoma Union Railway Co. (Okla. 1921) 197 Pac. 488.*

**D**OUGHERTY'S case decided by Supreme Judicial Court of Massachusetts, May 25, 1921, holds that a sunstroke suffered by an employee while doing the work he was employed to perform, was received in the "course of his employment." Within the workmen's compensation act an injury "arises out of employment" within the meaning of the Act when it appears in view of all the circumstances that there is a casual connection between the conditions under which the work is required to be performed and the resulting injury. In a proceeding under the workmen's compensation act for the death of an employee who suffered a sunstroke while delivering a load of coal, where there was no evidence that when engaged in delivering the coal he was peculiarly exposed to the danger of sunstroke by reason of the nature of the work, the finding that the claimant had not satisfied the burden of proving that the employee by reason of his employment was subjected to materially greater danger than other outdoor workers was not unsupported by evidence as a matter of law. The decree of the Commission was affirmed.—*131 N. E. 167.*

**C**ARROL vs. Industrial Commission of Colorado, 195 Pac. 1097, recently decided by the Supreme Court of Colorado, holding that where an employee had organic heart trouble and the strenuous work of pitching alfalfa hay in an enclosed building, combined with breathing dust-laden air, brought on an attack of heart trouble causing instant death, the condition of the air, or the fact

that it was dust-laden, was proximate cause of the death. This death was a result unexpected and unintended, and therefore an "accident," and death resulted from the injury proximately caused by accident within the Workmen's Compensation Act.—*195 Pac. 1097.*

**J**ACKSON vs. Industrial Accident Commission of California. The disabilities of a servant due to his general physical condition and not traceable to the injury, are not compensable under the Workmen's Compensation Act.—*195 Pac. 719.*

**T**HE Minnesota Supreme Court recently held that the Workmen's Compensation Act in force in 1917 did not give to the physician or surgeon who furnished medical treatment to an injured employee a right of action for the value of his services against an employer who had not requested or consented to the furnishing of the treatment given. In no event can an employer be held liable for such treatment in the absence of a finding that he either consented thereto, refused, or was unable to furnish needed treatment.—*Beach & Gendler (Minnesota, 1921) 182 N. W. 607.*

**I**N THE case of the Gatloff Coal Co. vs. Ramseur's Adm'x, the Supreme Court of Kentucky, in an action for the death of a coal miner by gas poisoning, alleged to be due to insufficient ventilation, held that the evidence was sufficient to authorize the submission to the jury of the issue whether the breathing of poisonous gases was a direct and proximate cause of his death.—*228 S. W. 1028.*

**A** CASE recently reported from Maine holds that the bursting of a blood vessel from the increased blood pressure resulting from the exertion of an employee in lifting a sack is an "accident" within the Workmen's Compensation Act, the term "accident" being defined as an undesigned and unexpected event.—*Patrick vs. J. B. Ham Co., 111 A. 912 (Me.)*

**T**HE question of compensation for industrial injury receives a somewhat different interpretation in a recent Pennsylvania case. It was found, in a proceeding under the compensation act to obtain compensation for the death of a servant, that the Decedent, while in the performance of his duties, met with an acci-

dent in attempting to lift a brake stick, and thereby suffered such strain internally as to cause hemorrhage of the stomach and bowels. His death followed and the court held that the evidence sustained the finding that his death followed as a natural consequence of this injury.—*Zukowsky vs. Philadelphia and Reading Coal & Iron Company. (Supreme Court of Pennsylvania, 1921), 113 A. 62.*

## Training in Rehabilitation Work

Training courses in the rehabilitation of physically handicapped persons now appear in the catalogues of two universities. The course being given at Harvard University, in the Bureau of Vocational Guidance, is described as follows:

*Rehabilitation and Receducation of Handicapped Persons.*—Discussions of occupational therapy, vocational guidance, try-out courses, testing, training, placement, and employment supervision, with an examination of present practices, social and economic needs, and desirable developments.

At the University of Chicago a course given in the graduate school of Social Service Administration is described as follows:

*Physically Handicapped Persons.*—The course includes study of types of handicapping disabilities and their causes and treatment, as related to the functioning of medical agencies; the effects of physical disability on earning capacity, and its relation to the processes of family rehabilitation; opportunities for disabled persons in industry and the use of job analyses in employing them; vocational training and labor placement; the value of personality in overcoming handicap, and of the community attitude in the work of rehabilitation; physical defects among school children in relation to handicaps in adult life; the safety movement and other methods of prevention; state and national legislation for the rehabilitation of physically handicapped persons. Useful especially to students of industrial management, teachers of vocational subjects and those interested in family case-work or hospital social service.

## Child Hygiene in Tennessee

A course of twelve lectures on hygiene and sanitation is being planned by the Nashville Commercial Club, with the assistance of the Rotary and other clubs of the city. The lectures will occur on a month during the coming year and will be given by prominent Nashville physicians. The first lecture was scheduled for June, the subject being "Nashville Babies." The July lecture, given by the city health officer, was on "Nashville School Children," according to the *Nashville Banner* of June 5.

# INSTITUTIONAL HEALTH

*The Health Problems of Schools and Colleges, Hotels, Summer Camps, Children's Homes and Homes for Dependents*

## Sensible Aid for the Blind at Chicago Lighthouse

By EDITH L. SWIFT, EXECUTIVE DIRECTOR, CHICAGO, ILLINOIS.

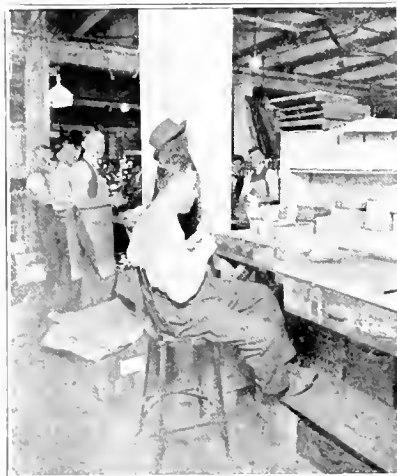
A SIGHTLESS student at the Chicago Lighthouse when asked if he was totally blind made this reply, "No, sir, not totally, only physically." This attitude of blind people toward their handicap is the normal reaction to the treatment they receive at the industrial training school for the adult blind which is conducted by the Improvement Association for Blind People at 3323 West Twenty-second Street, Chicago.

Chicago was among the first cities in this country to recognize the right of normal blind people to a vocational training which would enable them to be self-supporting members of the community. Nine per cent of Chicago's blind citizens have been trained to take their places in the fields of industry by the Chicago Lighthouse in the last twenty months.

The industrial training of the blind to fit them for work in factories and offices was begun by the Improvement Association for Blind People at the Chicago Lighthouse work shops in June, 1919. The school is maintained by private initiative and voluntary subscriptions and is the only industrial training school for the adult blind in Illinois. The Chicago Lighthouse is endorsed by the subscriptions investigating committee of the Chicago Association of Commerce.

The method employed is to study the individual blind men and women who apply for training. When something is found which they are able to do, they are given special training along the line of this latent ability. Confidence is gained by the blind student as the factory instructor works with him and gradually his self-reliance is built up. Through the courtesy and cooperation of employers openings have been found for stu-

dents of the school in various types of factory work and the teaching is completed in the factory at the identical operation on which the man is to be employed. The factory is first visited by the instructor and the foreman, under whom the blind man is to work, is convinced that the employment of a blind operative does not



This sightless man is a self-respecting citizen whom special training has enabled to earn his living by assembling contact points for the Edison Appliance Company.

mean that this man will be a drag on the production in his department. Often it is necessary for the instructor to have himself blindfolded and then do the necessary operations to win over the foreman to the idea that a blind man can do the work required of workmen who can see. The instructor keeps in touch through occasional visits, and, when need for additional instruction develops, he is able to continue the training so that the blind employee may not be limited to a single type of work.

The Chicago Lighthouse work shops are provided with materials on which to work by friendly firms who have become interested in this experiment in helping the blind to help themselves. In the reed shop one finds go-carts, baskets, and chairs in process of manufacture. Hand looms are in operation in the weaving shop where blind men and women weave beautiful textiles. The weavers memorize the patterns or write them in Braille and, once the choice of design and coloring is determined by the instructor, the weaver works independently with only occasional supervision. The textiles produced are sold in shops such as the Artists' Guild and the Service League for the Handicapped or direct to interior decorators. The mechanical operations taught in the school are varied. Such operations include the assembling of piece parts for phonograph motors, the assembling of automobile headlight deflectors, the threading of bolts, the operating of punch presses; in fact, any operation which makes it possible to train the fingers to do the work of eyes. Blind persons who are normal may be trained to do countless operations of a mechanical nature with speed and accuracy.

Blindness is considered a 30 per cent handicap, not a total disability. The men and women trained at the Chicago Lighthouse are taught to think of their handicap as something to be overcome not as an affliction for which they are to be pitied. Most of the students are mentally depressed when they apply for training, but a change is noticed after a few weeks. The blind respond very readily to intelligent guidance and cooperation and eagerly seek the training which





This man earns his way assembling automobile headlight deflectors at Mohr, Inc. Self-reliance does not suffer when real work becomes possible to the visually handicapped.

is to make them able to enter the field of wage earners.

Seventy-five thousand blind people are citizens of the United States and, according to the census, less than one-third of this number earn more than three hundred dollars a year. The greatest advancement along the lines of sensible aid for the blind has been made in the last two years by the organizations like the Chicago Lighthouse which have specialized in increasing the number of occupations in which the blind may find gainful employment. Normal blind persons do not seek charity but they need training and to be separated in the eyes of the public from the class of blind persons who are subnormal or have some affliction in addition to their sightlessness. Graduate students of the Chicago Lighthouse earn from twelve to thirty-two dollars a week. Of the two thousand blind persons in Chicago 189 have been made self-supporting through the vocational training given during the past twenty months at the Chicago Lighthouse. The average cost of training and placement is two hundred dollars. Persons who know that blindness for them is inevitable should go to this school early and prepare themselves for a trade or profession while some portion of their sight remains. The ability to distinguish light from darkness or to see an object as a blurred outline is of inestimable value as compared with total blindness. Even a little sight may be conserved, but it will atrophy if it is not used in many cases. The person whose sight is failing should be put where his surroundings are cheerful and his condition is understood. The knowledge that he is preparing himself for an occupa-

tion which will insure his independence when blindness comes will in some degree mitigate the dread of impenetrable darkness.

The world war has taught the public that blind soldiers and sailors can be rehabilitated and replaced in industrial fields. These soldiers of ours of whom there were less than three hundred have been given every opportunity to prepare themselves for wage earning by the vocational training given at Evergreen near Baltimore under government supervision. Their sacrifice will not have been in vain if the successful outcome of the government's work in training them brings to the consciousness of the American people the pitiable condition of the civilian blind. America owes her blind citizens training for service to America that they may become an asset, not remain a liability.

The Chicago Lighthouse has trained

blind people to be self-supporting in the following operations in factories:

**Assembling:** Automatic telephone piece parts, phonograph motor piece parts, electric light sockets, electric switches, hermetic sealing caps, paper cartons, gasoline lamps piece parts, nuts for gasoline lamps, headlight deflectors, ball bearing rollers.

**Wrapping:** Electric flat irons, furniture for shipment, dowels.

**Sorting:** Needles, trimmings from gaskets, rubber scraps.

**Stacking:** Laminations, mica.

**Folding:** Paper cartons, towels.

**Mechanical Operations:** Riveting press, operating foot punch press, nutting bolts on power machine, tapping, machine operation on power press, drill press operation on power press, threading ball sockets for motors.

Piano tuning, chair caning, fiber furniture weaving.

The blind also excel as basket weavers, baby carriage weavers, textile weavers, typists, dictaphone operators, and stenographers. Graduate students have earned \$30,000 in the past year at these occupations.

In cooperation with Peter J. Peel the Chicago Lighthouse conducted the first blind massage class in America and graduated eight competent masseurs. Two of these graduates were employed to work on the wounded at Fort Sheridan Hospital.

On the Board of Advisors of the Chicago Lighthouse which is conducted by the Improvement Association for Blind People are W. A. Alexander, Joseph M. Cudahy, Charles W. Folds, Dennis F. Kelly, Charles G. King, Alfred T. Martin, Joseph E. Otis, Peter J. Peel, Frederick H. Rawson, and Charles H. Thorne.



Chicago Lighthouse graduates are here employed by the Garret Go-Cart Company in the process of weaving baby carriage bodies.

# Educational Needs of the Crippled Child

## Mental Handicap Will Augment Physical Defect if Orthopedic Hospitals Are Not also Educational

By ALEXANDER E. HORWITZ, A.M., M.D., ST. LOUIS UNIVERSITY, ST. LOUIS, MO.

AT THIS age of conservation of human resources an opportunity is offered to redeem ourselves from our long apathy toward the crippled child. A strong liability can easily be converted into as strong an asset. We have never willfully neglected the crippled child; we have cared for him according to our lights, but these lights have changed and, in the view of modern standards of efficiency, the benefits conferred by us upon the children of yesterday are to be regarded as criminal today.

The physical care of the child is no longer the chief requisite. We have not accomplished our duty when we rest there. It is not to be denied that a sound body is the prime requisite for a sound mind, and to strive for that goal is laudable; but we must be alert to the fact that these crippled children will remain crippled, and to neglect the mental faculties while the physical condition is being improved is false logic and an irreparable wrong.

### Unpreparedness for Life

The cripple is no longer regarded as accursed of God. He is to be regarded as the product of environment, our own creation. He is no longer assigned to Spartan mercies, although that was far more humane than our modern neglect. We save the child from an early innocent death, preserve and strengthen his body in so far as is possible under expert care, and thrust him unprepared upon a hostile, competing world. His handicap is doubled; a weak physique, an undeveloped mind. He is early thrown to the surface of the whirlpool, regarded as waste, and cast aside. He becomes an object of pity, repugnance, and charity—three conditions detrimental and fatal to mental development.

In the early formative period the crippled child's mind is capable of high development, higher in some degree than that of the physically sound child. His energies, deprived of the channels in which those of the normal child run, may be directed by proper guidance toward mental development. Given no guidance, or improper direction, he becomes introspective and

morbid. Morbidity is not conducive to the production of good citizenry. Unearned favors, euphoniously and erroneously called charity, are likewise not conducive to the development of a mind tending to self-respect. He who could easily have become a producer is become merely a consumer, a drain upon the community, and a drag upon himself. He performs no useful communal or social function. He hates himself; he hates his Creator, his environment. He is a king bee, its useful functions having been performed.

### Schools Help Small Number

The number of crippled children is yearly increasing throughout the Union, despite our boasts of more ad-

this condition. There are state and private institutions where remedial attempts are made; in some, attempts, in others, realizations. The total number reached is but a fractional part of the problem. The establishment of public institutions in every state will prove an economy rather than an expense. Public opinion should be moulded and directed toward this economy. It is due the crippled child; it is not a favor. We create him, we should give him the means of livelihood. We maintain costly educational institutions for the normal child, and entirely neglect a large part of our school-age population. That he is physically unable voluntarily to attend school does not prove that training should be withheld from him. Educational facilities should be brought to him or arrangements made for group instruction.

For the treatment of crippled children there are at present four state institutions with a capacity of 685 beds: (1) the Massachusetts Hospital School, 300 beds; (2) the Minnesota State Hospital for Crippled and Deformed Children, 160 beds; (3) the Nebraska Orthopedic Hospital, 100 beds; (4) the New York State Hospital for Crippled Children, 125 beds.

### Hospitals Conduct Schools

(1) The ideal is presented by the Massachusetts Hospital School in which the educational training is at a par with the physical care. Cooking, sewing, gardening, and shop work make proficient and self-sustaining individuals upon reaching maturity. The expense for the year amounted to \$93,125, a per capita per week of \$6.56, of which amount about half is appropriated by the state and the remainder obtained from other sources.

(2) The Minnesota State Hospital, according to its last published report (1916), cares for 160 children, where all modern methods in instruction and shop work are carried on. No mention is made of per capita cost.

(3) Nebraska Orthopedic Hospital gives modern instruction both in classrooms and wards. Only a small amount of shop work has thus far been instituted.

(4) New York State Hospital pro-



N. O. P. H. N.  
Children like this are the wards of society. Fed on patent foods, and little of anything with regularity, this six-year-old child did not walk till she was five. Her restoration and education must go hand in hand.

vanced hygienic conditions. A true census is lacking; but the estimate, not exaggerated, is that of one per 1,000 of population, or 62,500 for all states, a vast army of inefficients for the creation of which we are responsible.

Let us not be too harsh upon ourselves in this matter, as there are bright spots here and there where intelligent work is conducted to remedy



Society's new sense of responsibility toward crippled children is typified by this scene from Spaulding School, Chicago, showing the physical director with her young charges.

vides scholastic instruction and useful arts.

In these four institutions scholastic and shop instruction in varying degrees is given in all. In one, gardening is taught. The expense to the taxpayers has justified itself. The average per capita of \$6.50 a week is moderate. The results obtained are satisfactory. Useful citizens are sent forth to compete in a free field. They are prepared for economic independence upon reaching maturity.

As a nucleus these institutions are serving splendid objects. The total number of children reached is less than 700 for the four states, or an average of about 170 for each state. Any one of our large cities could furnish this full quota of 700. The work should be broadened to include every crippled child of sound mentality. A concerted movement should be inaugurated toward the establishment of such institutions in all states. It should not be left to private initiative.

There are fifteen homes with a capacity of 763 beds. Of these one is educational.

There are eighteen orthopedic hospitals devoting themselves exclusively to crippled children. Of these two are educational. The number of beds total 1,200.

There are eight educational institutions for the crippled child, of which four have already been included under other heads. These eight institutions care for 600 children. The total of those cared for is 3,548. The total estimated number of crippled children throughout the country is 50,000 to 60,000. About 7 per cent of all crippled children receive care, either

physical or scholastic. A supplementary list is printed herewith giving the names, location, and the number of beds of the institutions serving the crippled child.

That all these hospitals, homes and schools care for but part of the crippled population needs no discussion. That an infinitesimal part receive educational training is another undisputed fact. That the child, where it does receive hospital care, should be neglected from an educational standpoint is a condition which should not be suffered to exist. That this child should be deprived of two or three years schooling, or, if older, of trade instruction, is not just to him or to the community.

The question arises as to where to place the responsibility for this educational work. It is an axiom in civic improvement that no innovation is adopted until it has shown itself practical under private experiment. The six private educational institutions and two state educational institutions where this work has been carried on for years are beyond the experimental stage. Definite results have been accomplished. It should be extended. It should not be left to private undertakings. It is a public problem and should be so regarded.

In each civic or state community a sufficient number of crippled children exist. These have as much a claim upon the community from an educational standpoint as the physically sound, and should not be disregarded. From a humane standpoint they deserve it. From a civic standpoint, they are children of taxpayers and should receive their share.

The city of Chicago is a pioneer in caring for its crippled children. Three hundred are here given special instruction at the Spaulding School, which gives a more varied course in shop and other work than is offered at any of the state institutions. The results are gratifying. The per capita cost is only slightly more than that of educating the subnormal child. Quoting from its bulletin: "The justification of the great per capita cost is not eight years of being different from his schoolmates, feeling 'I can't play as he plays,' 'I can't follow the same course of study, I am older than my classmates,' but 'I can.' Instead of being shielded and guarded or neglected by healthy, normal children, he helps and guards one weaker. Instead of brooding over his deformity, always under a wrong subjective influence, in the years when his disposition is in the making, his deformity is openly discussed, its possibilities and limitations laid bare. He even learns to laugh with his playmates at himself or them in their awkward attempts at adjustment. When they go into the world they return and discuss philosophically and without pain readjustments there."

Assuming that the responsibility is placed upon the city government, several problems present themselves. Is it advisable and desirable that the crippled child be segregated? More systematic work can be done where they are grouped. It also puts the child in better mental attitude. He sees children whose condition is worse than his own and is in a manner able to be of service to them. The results in the various institutions bear out the benefit to him in such environment.

The position of the crippled child in the neighborhood school is not always happy. He feels he is pitied and merely suffered; he is not in accord with his surroundings. He is not able to take advantage of the contact with normal children and does not accommodate himself to it. Special schools are a desideratum. The mode of conveyance is a problem for consideration, but this needs but slight improvement as it has been worked out in Boston, New York, and Chicago.

For the child who cannot be transported to and from school and who is no longer a hospital patient, the school board should provide private instruction. These children are better grouped in hospital schools and taught systematically.

My plea therefore is this: (1) Establish hospital schools for all crippled



Underwood &amp; Underwood.

Frequently these little patients are kept for years, but they are taught as well as cured in the hospital.



Underwood &amp; Underwood.

The bed is the workshop, but these little artisans feel the joy of creative work.

pled children needing physical care. (2) Establish special schools for all convalescent and ambulatory patients. (3) Establish work shops for those able to take advantage of them. (4) All these to be established under public supervision.

Their value has been demonstrated. They should be put to universal practice. Following are lists of the state institutions, homes, hospitals, and miscellaneous institutions, and the number of beds in each of institutions that provide a plan for the care of the crippled child:

#### State Institutions

*New York*—West Haverstraw, New York State Hospital for Crippled, 125 beds.

*Massachusetts*—Canton, Massachusetts Hospital School, 300 beds. (educational).

*Minnesota*—St. Paul, State Sanitarium, 160 beds.

*Nebraska*—Lincoln, Nebraska Orthopedic Hospital, 100 beds.

#### Homes for Cripples

*Connecticut*—Newington, Virginia T. Smith Home, 110 beds; Wilton, St. Elizabeth's House, 30 beds.

*Illinois*—West Chicago, County Home for Convalescent Children, 70 beds; Chicago, Home for Destitute Crippled Children, 118 beds.

*Maryland*—Orange Grove, St. Gabriel's Home, 50 beds.

*Massachusetts*—Hyde Park, New England Peabody Home, 40 beds (educational).

*Missouri*—St. Louis, Summer Home for Crippled Children, 20 beds.

*New Jersey*—Englewood, Daisy Field's Home and Hospital, 20 beds.

*New York*—Garden City, House of St. Giles the Crippled, 64 beds; New York, Darach Home for Crippled Children, 18 beds; Southampton, Home for Crippled Children, 30 beds.

*Ohio*—Cleveland, Holy Cross House, 20 beds.

*Pennsylvania*—Allentown, Good Shepherd's Home, 56 beds; Philadelphia, House of St. Michael (colored cripples), 37 beds; Pittsburgh, Industrial Home for Crippled Children, 50 beds.

#### Orthopedic Hospitals

*Georgia*—Atlanta, National Surgical Institute, 22 beds; Scottish Rite Hospital for Crippled Children.

*Maine*—Portland, Children's Hospital, 52 beds.

*Michigan*—Detroit, Michigan Hospital School (educational).

*New Jersey*—Orange, New Jersey Orthopedic Hospital and Dispensary, 16 beds.

*New York*—New York, New York Orthopedic Hospital and Dispensary, 242 beds; New York Hospital for Deformities and Joint Diseases, 72 beds; Port Jefferson, St. Charles Hospital for Crippled Children, 300 beds;

Rockaway Beach, Neponsit Beach Hospital for Children, 120 beds.

*Massachusetts*—Boston, Boston Children's Hospital.

*Missouri*—St. Louis, St. Louis Children's Hospital.

*Ohio*—Elyria, Elyria Memorial Hospital; South Euclid, Rainbow Hospital for Crippled Children, 86 beds.

*Pennsylvania*—Philadelphia, Pennsylvania Orthopedic Hospital and School of Mechano-Therapy; Philadelphia Orthopedic Hospital, 136 beds.

*Washington*—Seattle, Children's Orthopedic Hospital, 60 beds.

#### Educational Institutions

*Massachusetts*—Canton (state), Massachusetts Hospital School, 300 beds; Hyde Park, New England Home for Crippled Children, 40 beds; Boston, Industrial School.

*Michigan*—Detroit, Michigan Hospital School.

*New York*—New York, Crippled Children's East Side Free School, 120 beds.

*Pennsylvania*—Philadelphia, Widener Memorial Industrial Training School for Crippled Children, 112 beds.

*Illinois*—Chicago, Spaulding School for Crippled Children, 300.

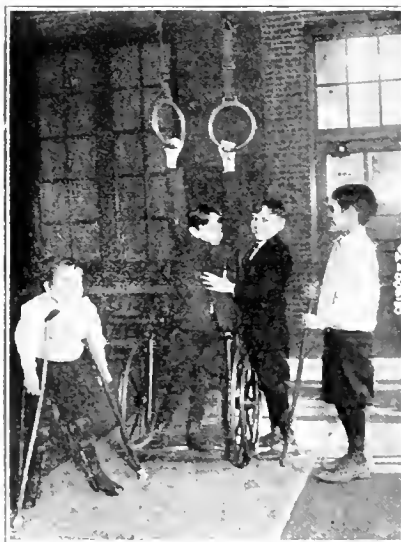
#### Miscellaneous Institutions

*New York*—Tarrytown, "Robin's Nest," crippled children, 22 beds.

*New York*—Society for the Relief of the Ruptured and Crippled, 200 beds.

#### Study Immigrant Children

The medical inspectors and nurses of the Bureau of Child Hygiene have been directed to trace and follow up immigrant children who have recently been enrolled in public schools. The Bureau will investigate home conditions and connect the family with Baby Health Stations.



Underwood &amp; Underwood.

The daily exercise of these crippled children are properly adapted to be corrective. Schooling must be provided during treatment if they are not to be doubly handicapped.

# Heating and Ventilating of Institutional Homes

Especial Application is Made to Homes for  
Convalescents, the Aged, and for Children

By JOHN R. ALLEN, DEAN, COLLEGE OF ENGINEERING, UNIVERSITY OF MINNESOTA, MINNEAPOLIS, MINN.

THE ventilating and heating of buildings for convalescents, the aged, and for children are most important considerations in connection with the health and comfort of the occupants. Not only should a great deal of care be given to the design of the system, whether natural or mechanical ventilation is resorted to, but equal care should be given to the operation and maintenance of the system. Many of the popular ideas in regard to ventilation are found to be incorrect in the light of recent investigations. In general, we are little concerned with the chemical composition of the air. Its physical properties are of far greater value.

does not constitute ventilation in the modern sense.

## Body Temperature

In considering the effect of ventilation upon the human system, the lungs may be considered as part of the skin, and as far as ventilation is concerned, perform the same function—that is, the control of body temperature. One of the most sensitive functions of the human body is the control of temperature. A change of a few degrees above or below normal in the human body produces serious physiological conditions. The temperature of the body is controlled by the action of the skin and lungs.

grometer or a psychrometer. This instrument consists of two thermometers of equal reading placed side by side. One thermometer is left in its normal condition and the bulb of the other thermometer is kept wet by means of a muslin cloth dipped in water. The air motion is usually measured by some visible gas or light toy balloons in the room. If the air motion is zero, the determining factor is the wet bulb temperature. As the air motion increases we must increase the wet bulb temperature to maintain comfort. In determining the proper wet bulb temperature for comfort, another factor must be taken into consideration. This is the physical

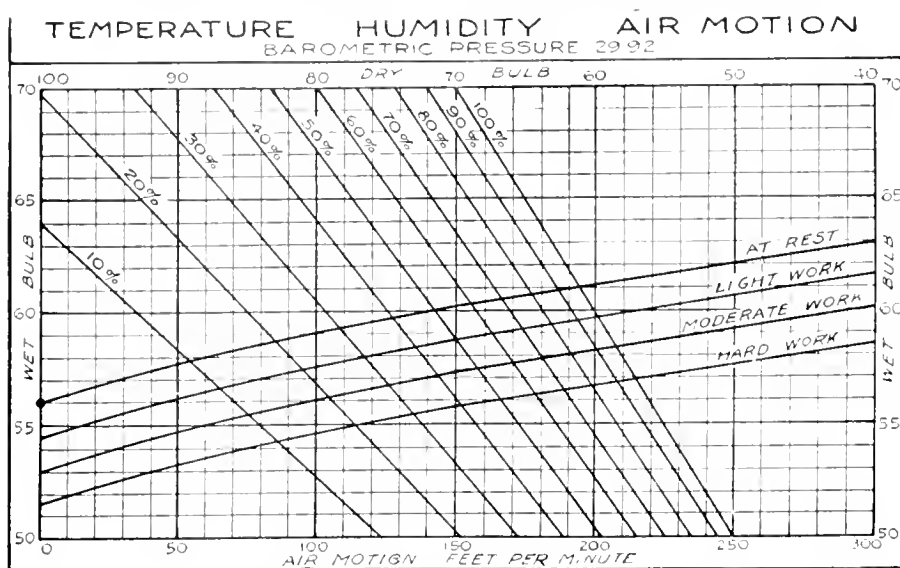


Chart prepared by Dr. E. Vernon Hill of the Chicago Department of Health for the proper correlation between temperature, humidity, and air movement in the heating and ventilating of buildings.

Chemically, there is practically no such thing as fresh air. All air is substantially of the same chemical composition, and as far as the chemical composition of the air is concerned there is no difference in the effect upon the lungs of the air inside the building as compared with the air outside the building. There is a prevailing idea that ventilation consists of introducing a certain amount of air into a building, but this

This cooling action is controlled by the air passing over the skin and carrying away heat both by contact and by evaporation. The effectiveness of the air in controlling the temperature regulation of the body depends upon the temperature, humidity, and air movement. The chart below, prepared by Dr. E. Vernon Hill of the Chicago Health Department, shows the relation between these three factors in securing the greatest bodily comfort.

The humidity in a room is measured by means of a wet and dry bulb thermometer, sometimes called a hy-

state of the people in the room. The four curves in the chart marked "At rest," "Light work," etc., show how the wet bulb temperature must be varied depending on the physical state of the occupants. In using the chart it is necessary first to determine the air motion which prevails in the room. Let us suppose the air motion is thirty. Find the intersection of the air motion and the line representing the physical state, which in a health institution would usually be "At rest," and suppose intersection of the line of thirty feet air motion with the line "At rest" is fifty-seven.

\*Dean Allen died October 26, 1920. This contribution by Dean Allen has been edited by Mr. S. A. Scipio, acting director, American Society for Ventilating Engineers, United States Bureau of Mines, Pittsburgh, Pa.



The humidity readings as taken by a psychrometer are now plotted, using the scale at the top of the chart marked "Dry bulb." The dry bulb is assumed to be seventy. Also assume that the wet bulb reads 61 degrees. By following the line down from 70 degrees in the dry bulb and following across until this is intersected by the line of 61 degrees for wet bulb, we read that the corresponding humidity is 6 per cent. From our previous condition of air motion and physical state we required a wet bulb of only fifty-seven. It is evident that the actual wet bulb is now four degrees too high. This can be remedied in two ways; either by increasing the air motion in the room, or by reducing the humidity. From the study of this chart it may be seen that bodily comfort very largely depends upon the wet bulb temperature and this can be used as a measure of the comfort of a room.

### Dust More than a Nuisance

In addition to the factors given above there are three others to be considered—namely, dust, bacteria, and odors. Dust in homes for the aged, convalescent homes, and other similar institutions must be considered more than a mere nuisance. From the standpoint of health this factor is always important and in certain localities it might be a serious consideration. It is in this connection that the problem of proper humidity is of so much importance, especially in certain health institutions where there is no artificial means for humidifying the air. In such buildings, during the winter season, the relative humidity of the air is extremely low, and the result is that moisture is drawn from woodwork, clothing, rugs, and draperies, etc., causing heavy clouds of dust to be carried about the room upon the least agitation. The dust, when breathed, irritates the mucous membrane and its effect upon the nervous system seriously interferes with the convalescence of the patients in these homes. The dust content of the air should be reduced to a minimum by special attention to its accumulation in the room, and if possible, by means of artificial humidification.

Dust must also be considered in connection with bacteria, as much of the bacteria in the air is carried by the dust and not by the air itself. Just what effect the bacteria of the air has upon the health is still unsettled, but of course an excess of pathogenic bacteria must be undesirable.

The last consideration is that of

odors. Odors in themselves are not in general injurious, but their effect is largely psychological, and for that reason they cannot be neglected. Most people judge the condition of ventilation in a building by the odor. It is not an infallible test but you cannot convince a man against the evidence of his own senses. Therefore, it is always an important consideration.

### Value of Circulation

As far as temperature, humidity, and air circulation are concerned, there is absolutely no necessity of introducing outside air. These could all be controlled by re-circulating the same air. Most people do not understand the essential reason for opening the windows, particularly in the summertime. It is not to introduce so-called pure air, because in most cases the air in the room is chemically the same as the air outside; but to reduce the temperature and get air circulation, principally the latter. In many cases, where the complaint is made that the air in the room is bad, all that is necessary to improve the conditions is to put in some means of circulation. Circulation is one of the important considerations in ventilation; and it is often lost sight of. If temperature, humidity, and circulation were the only considerations in ventilation, then very little outside air would be introduced for ventilating purposes; but we have the other factors in the problem, such as dust, bacteria, and odors.

The only method in general use to reduce odors is by means of dilution, which necessitates the introduction of large quantities of air free from odor. The disagreeable odors can only be reduced by the introduction of large quantities of air from the outside. This outside air, however, if directly introduced into the room, may produce conditions of temperature and humidity which are very undesirable. It may also introduce dust. It is therefore necessary in any well ventilated building to have the condition of the air under control at all times. This means a properly installed ventilating system must control temperature, humidity, circulation; and in addition reduce the dust, bacteria, and odors to a minimum.

### Operating of Ventilating Plant

In many buildings very complete ventilation plants have been installed but have never been satisfactory, largely due to the fact that they have not been satisfactorily operated. The operation of the plant is just as important as its original installation.

Every executive should know or should find out how much his engineer knows about air conditioning and give him the proper apparatus so that he can determine the condition of the air in the various portions of the institution. He should also know that his engineer understands his plant thoroughly, and that he knows how to control the air in the building in order to obtain the desired conditions. In many institutions, the engineer that burns the least coal is the best engineer. This is the same as saying that the surgeon that uses the smallest amount of surgical dressings and antiseptic solutions is the best surgeon. You cannot have something for nothing, and if you desire properly to ventilate a building, you must be willing to pay for it. Do not judge the operating engineer by the coal pile, but judge him by the air conditions in the building. It is not fair to expect a poorly equipped engineer at a small salary to be competent and to understand the operation of a complicated heating and ventilating system which may cost one hundred thousand dollars or more. In large institutions it is important that you have a competent engineer, that he is paid good wages, and then you can demand satisfactory results.

In the state of Minnesota, for instance, the law provides that all school buildings shall have a properly installed ventilating system, but the law does not require that the ventilating plant be operated. The same is true in all buildings where the heating and ventilating system has been well installed and is complete in every detail, but where in many cases the ventilation is turned off either wholly or partly most of the time, and is never properly operated. The furnishing of properly conditioned air to all health institutions is just as important as the water and milk supply, and should be looked after with equal care. The neglect of this phase of operation may be just as detrimental to the patients as neglect of any other factor in the management of a health institution. Much more is involved than merely preserving a given balance in the given chemical constituents of the air. Refinements of observation methods are called for, properly checked by the sensation and well being of the occupants of enclosed places. Many recent contributions have been made to this subject, notably the reports of the observations and improved instrumentation by Leonard Hill, all tending toward a nicer sense of the mechanical and physiological factors.



# Minimum Health Standards in Schools\*

## Scientific Methods of Health Bookkeeping Serve to Disclose Health Hazards

BY LOUIS I. HARRIS, M.D., D.P.H., DIRECTOR, BUREAU OF PREVENTABLE DISEASES, DEPARTMENT OF HEALTH,  
NEW YORK CITY

IN THIS article it is aimed to present an outline of minimum sanitary standards for the protection of school children and teachers. The contributions made by various observers to our knowledge of the sanitary and working conditions in schools and their effects upon the health of both the pupils and teachers are very meager. Much valuable information is available with reference to the health of school children as a result of school medical examinations and special studies, but aside from Terman's "The Teacher's Health," there have been no very substantial, scientific or comprehensive contributions on this subject. The health of the teacher determines not only the quality of his services to the individual and to the community as a whole, but is of grave concern to every parent as an index of sanitary conditions in the school environment and because of the intimate contact which necessarily exists between teachers and pupils.

### Statistics Misleading

A note of caution should be sounded with respect to certain fallacies that underlie the statistical studies which have been made of the health of school teachers, particularly those dealing with the mortality rate from various diseases among those so employed, as contrasted with other occupational groups. The reports of the Schlockow Committee and of Dr. L. I. Dublin on this subject do not present typical cross-sections which give a fair basis for judgment as to the degree to which the teaching profession is a hazardous one. These studies present but a fragmentary picture covering a limited period of time and, in the main, a record of those illnesses and diseases exclusively, for which the regulations provide compensation or which for other special reasons come under official notice.

Those who venture to offer definite conclusions with reference to the presence or absence of hazards in the school environment and in the teaching profession, on the basis of the

*Specific public health problems are bound up with school hygiene because of the large proportion of the ill health of the community which is found among children of school age.*

*This subject has been covered from the viewpoint of physical equipment and certain fundamental principles of sanitation have been definitely worked out.*

*Medical inspection of school children has not, however, meant health supervision for teachers and little is definitely known regarding the occupational hazards of teaching either to guide future studies or to serve as a prophylaxis against their menace to health.*

available records of the number and causes of illness and deaths, are prone to make the same serious error that frequently is noted with respect to military statistics. The cases of illness and of disease which are published in military statistics are, by and large, those which cause a relatively marked disability. At the close of the recent war, morbidity and mortality statistics were published showing the incidence of disease and of deaths, and their causes, in the army. Since then, however, through various sources—official and unofficial—much additional information has come to light about the many cases of so-called "irritable heart," of mental disease, as well as of thousands who since the close of the war have come to official notice as the subjects of tuberculosis, mental disease, or as suffering from the sequelae of poison gases, of under-nutrition, of severe physical labor and exposure. These as well as other conditions have been responsible for much illness or disability which did not appear in official records. Those who continued in the trenches despite certain more or less significant illnesses were also never reported. Likewise, with respect to statistical studies of teachers.

What is now required is a study

that will reveal not only the cases of illness in teachers which come to official notice, but also those others which have a serious effect upon the physical and mental well being of teachers and which may affect their capacity to teach and the quality of their work. We should know how many of these teachers persist in remaining on active duty in the trenches, so to speak, despite ailments and illnesses which affect them, and who thus really "malingering" or pretend to the possession of health which they have not. Such studies should cover an adequate span of years and should subdivide the teachers who form the subject of such studies, not only according to sex, but into the various age groups, so that we may record whether they are subject to a variety of diseases which are directly or indirectly caused by their vocation, and particularly whether such diseases appear in a relatively early age group. In other words, whether they suffer prematurely from the effects of fatigue, of any specific diseases, or from the result of exposure to insanitary conditions. The cases of illness should be studied and referred back, if possible, so as to learn whether there is an association between a particular type of illness or disease or cause of death, and the conditions obtaining in respective schools.

Such studies should aim to determine how much of the "labor turnover" or the desertions from the ranks of the profession are due to discomfort or ill health induced by the nature of the work. As the result of their experience, industrial hygienists invariably ascribe a certain amount of labor turnover to conditions in industry which have a relation to health and comfort. In such studies, emphasis should not be laid merely upon the number of deaths or even upon the number of cases of illness from various causes, but special consideration should be given to the question whether the work in a given group or type of teachers is compatible with "keeping fit" so as to enable the teachers to enjoy normal and healthful life. Further, such studies should not be rated as com-

\*An address delivered before the Teachers' Union, New York City, March 17, 1921.

plete unless they are based on the most careful clinical observation of a large number of teachers over a considerable period of time, so as to measure more accurately the effect upon the general powers of resistance and general well being, as well as upon the nervous system, the heart, the digestive system, the lungs, and the other parts of the body, of the work that they are doing. Due consideration should of course be given to any personal habits, unusual home conditions, or to a physical condition antecedent to entering the profession, which may have exerted an influence in causing certain clinical conditions which may be observed in the course of such studies.

In the slow evolution of things, the necessity for the medical examination and supervision of school children has become recognized by civilized nations and by the more progressive communities. We must be sure that school children who are being medically examined for the discovery and correction of physical defects are not in the meanwhile subject to environmental conditions within the school which may in greater or less measure be responsible for the development of such or of subsequent physical defects and disease. Therefore, the sanitary conditions of the school environment and the health of the school teacher who comes into such immediate contact with school children, are interlocked, and must be most carefully considered together.

The school teacher who suffers from a communicable disease, such as pulmonary tuberculosis, is a most grave menace because of the intimate contact with relatively large numbers of children, who, as medical men well know, are most subject to tuberculous infection. Therefore, the sanitary conditions prevailing in schools which may favor the development of tuberculosis or other communicable diseases may be of very great significance from the standpoint of their influence upon pupil and teacher. Moreover, ill health may have a very serious effect upon the disposition and temperament of school teachers and may seriously influence their work in molding the character of the pupils under their care.

With our gradual advance in medical knowledge has come a better understanding of the particular significance of fatigue, not only as the cause of mental strain, of so-called "neurasthenia," but as the cause of a direct or indirect reaction through nervous channels upon various organs and glands in the body, whose com-

plex actions are delicately balanced and correlated so that a disturbance of one such organ or gland may radiate to many, and cause perversions of circulation, and of many of the vital processes of life. We have also come to appreciate that the powers of resistance of the body which determine how susceptible an individual may be to any one of the communicable diseases, are very seriously affected and undermined by fatigue. Fatigue, therefore, aside from causing certain nervous or mental disorders may play a serious role in influencing the development of a variety of organic diseases, or in predisposing individuals to communicable diseases.

Fatigue is not only determined by the number of hours of work, or by the number of days of work each week, but depends to a great degree upon the character of such work. It is especially induced by the necessity of concentrating, and taxing the powers of attention, memory, and alertness. For example, everyone who has had experience in studying fatigue in industry has given attention to the strain upon the girls engaged in the process of weaving who may have to take care of twelve or even more looms at a time, or upon girls doing similar types of work which require them to tend to from twelve to thirty or forty units of machinery at one time. In like fashion each pupil may justly be regarded as comparable to a unit of machinery insofar as it taxes and strains the mental and visual faculties and causes a physical effort connected with speaking to a large group. No one, except those who have done public speaking or teaching continuously for prolonged periods can appreciate the physical as well as the mental strain which constant loud speaking may cause. Fatigue is greatly aggravated by any insanitary condition which may obtain in the school or classroom. Excessive heat, poor ventilation, inadequate lighting, dust in the air,—all of these, and many other environmental factors tend to aggravate as well as to induce fatigue.

In industry, it has frequently been possible for experts who study fatigue, to recognize its presence and to estimate its degree, by the amount of spoiled work which is produced by those who are suffering from this condition. Unfortunately, this test cannot be applied in dealing with that intangible product of the teachers' labors,—namely, knowledge and character development. It would be of inestimable value if "spoiled work" of teachers, as the result of the fatigue from which they may be

suffering could be even approximately estimated. Because of its tremendous significance and value to the life of the community and of the individual. It would be most valuable to know how many children were unfavorably influenced with respect to the acquirements of character and knowledge or were "spoiled" or marred in the process of their making as the result of fatigue in the teacher. Unfortunately, it has been found that workers themselves are not always conscious of fatigue, nor are their sensations a reliable guide as to its presence. For these reasons too much stress cannot be laid upon the importance of having proper and sanitary environment, so that children who spend a considerable part of their growing years in the school environment shall not be unfavorably affected by insanitary conditions,—and teachers likewise,—and so that such conditions of work shall not be productive of fatigue which may cause a marked susceptibility to disease in both pupil and teacher or be reflected ultimately in the character of the children who came out of our schools.

While tuberculosis is not a conspicuous hazard in the teaching profession, it must nevertheless be reckoned with as a most important disease to which teachers are in a fair measure exposed and subject. No adequate scientific work has yet been done under proper medical direction to ascertain to what extent the physical condition of teachers before they enter upon their profession, or the home conditions, the school environment, or the exposure to conditions which may favor the development of bronchitis or respiratory infections, as well as personal habits, may each contribute to call into activity a latent tuberculous infection which most adults harbor, and cause an active process to be lighted up. In the study made by Dublin of morbidity and mortality statistics which were available through official sources, he pointed out that only thirty-eight teachers in New York City had pulmonary tuberculosis during 1915. It is reasonable to suppose that the thorough and systematic physical examination of our school teachers would have revealed a very considerable amount of tuberculosis that had not previously been recognized or disclosed. Pulmonary tuberculosis, even if there be but thirty-eight cases of it among school teachers, is a much more grave condition in members of this profession, who come in such direct and intimate contact with great masses of children, than is indicated

by its numerical prevalence. The tuberculous teacher is potentially a distributor of such infection to all of his or her pupils because, as already mentioned, childhood is the age of greatest susceptibility to tuberculosis.

While there is much that is indefinite with reference to the prevalence of specific occupational hazards or diseases among teachers, because of the fallacious methods of inquiry upon which we have heretofore had to depend for our statistical knowledge, one may, however, state quite definitely on the basis of statistical evidence that tuberculosis, chronic laryngitis, or "speaker's voice," nervous disorders which assume a variety of forms, especially so-called "neurasthenia," digestive disorders, respiratory infections—notably acute bronchitis, influenza, pneumonia and follicular tonsillitis—as well as defective eyesight, and in some, female menstrual disorders, may be properly regarded as occupational diseases incident to teaching.

Neurasthenia and other nervous disorders have already been referred to as being very frequent among school teachers; it is fair to assume this prevalence, not only on a statistical basis but also because they have been found to be most markedly prevalent among skilled workers in various other professions and trades. As already briefly indicated, the nervous manifestations may cause reflex disturbances, as of the digestive organs, or, generative organs (in females). Such nervous disorders may be temporary in character, or they may become firmly and permanently established. Acute infectious diseases would no doubt be found to be relatively frequent, if the health of teachers was studied, not merely by means of the compilation of inadequate statistics, but by continuous medical supervision, and by follow-up to as-

certain the cause of absences. The intimate contact of teachers with children, who, as it is well known, are especially susceptible to a variety of acute infectious diseases, make them likely to contract such diseases.

Chronic laryngitis has been very frequently found among teachers, as indeed among others who are compelled to use the voice a good deal. This results in hoarseness and very considerable discomfort, and may be followed by a secondary bronchitis, resulting from extension of inflammatory conditions affecting the larynx and the pharynx. Laryngitis, and acute or chronic bronchitis, are in a measure capable of being caused as the result of exposure to chalk dust. Dr. George M. Kober in his latest work—Occupational Diseases, by Kober and Hanson—has particularly emphasized the hazard from chalk dust not only with relation to bronchitis, but with reference to the development of pulmonary tuberculosis. In reviewing the prevalence of tuberculosis in teachers which some writers have reported as being comparatively low, he says:

Higher rates for tuberculosis have been reported by Schmidt of Dusseldorf (than death rate of 1.3 males and 1.55 per 1000 females in Bavaria) and our American statistics also indicate that school teachers are slightly more liable to tuberculosis than members of the other learned professions.

This is doubtless due to indoor life, confinement in badly ventilated school rooms, and the presence of dust. Diseases of the nervous system and uterine organs are also quite common, and teachers will do well to insist upon proper seats, absolute cleanliness of the school room, fresh air schools, or at least copious ventilation, and substitution of wet for dry methods of removing chalk markings.

Defective eyesight is very commonly found among school teachers and, while no doubt it is in a measure due to the strain upon the eyes in the

course of preparation for their profession, it may also, however, be produced in a very considerable number of cases by the strain to which sight is subjected in the course of routine work and particularly by defects of lighting. While there is insufficient evidence to warrant many of the statements which have been made with reference to the prevalence of certain diseases among teachers, one may nevertheless venture to assert that thorough and frequent medical examination of many teachers over an extended period of time, with a scientific method of health bookkeeping, would show the existence of numbers of organic defects which have not thus far been recognized or justly appraised. Surely, the glib dismissal of diseases said to be associated with teaching which has sometimes marked the reports of certain studies based on manifestly inadequate statistical evidence, is not scientific and has tended, unintentionally no doubt, to treat these moot points as if they had been settled conclusively and for all times.

In marshalling statistics one must be cautious in their use and in their selection that they may not consciously or otherwise be pressed into service to bolster up fixed preconceptions. As illustration one might balance against some statistics which have been published to discount the existence of occupational hazards in the teaching profession, the report contained in Bulletin No. 106 of the United States Bureau of Census for 1909 in which it is shown that in certain age periods, the mortality of teachers from certain infectious diseases and from organic heart and kidney disease is higher than for the general mass of females in industry. The point to be emphasized is that available data can be of service as a useful guide in planning scientific and thorough studies in the future.

### Deaths of Persons in Occupations

Teachers, Professors in Colleges (Females)		Percentage of All Cases at Specified Ages														
		Tuberculous Lungs			Apoplexy and Paralysis			Heart Disease			Pneumonia—All Forms			Bright's Disease		
		Teachers	General Workers	Female Workers	Teachers	General Workers	Female Workers	Teachers	General Workers	Female Workers	Teachers	General Workers	Female Workers	Teachers	General Workers	Female Workers
Ages	Deaths—All Causes															
25-34 years.....	269	38.7	36.0	35.7	1.5	1.2	1.3	5.2	4.8	6.4	5.2	7.4	5.7	2.6	4.0	4.6
35-44 years.....	191	19.1	23.6	21.3	4.1	2.7	4.0	9.3	7.7	10.5	11.9	9.5	6.4	7.2	6.6	7.7
45-54 years.....	167	7.8	14.4	10.2	7.8	5.9	8.4	8.4	11.3	12.7	7.2	9.0	8.0	9.0	9.7	10.0
55-64 years.....	130	2.7	7.5	5.6	6.9	10.1	12.3	10.0	15.4	15.4	11.5	8.3	9.0	10.0	11.7	11.5

## The Association Cafeteria\*

THE Y. W. C. A. cafeteria is a many sided institution. Conceived originally as a necessary service to business girls of limited time whose means would not permit them to secure dainty and wholesome food at sumptuous refectories, its aim was to provide the best foods on the market at the cheapest price it could be had.

It has long been recognized that the quality of the day's work is largely influenced by the kind and quality of food eaten day by day, purely for the sake of efficiency and as a commercial tool, many industries have supplemented the workmen's lunch box by the provision of warm and substantial midday meal. The Y. W. C. A. has done more than this. By establishing Association cafeterias at convenient points they have made sure that the meals of the working girl may be eaten in a pleasant place. No longer need her food be eaten behind the counter, in the dressing or toilet room, the work bench, or in the workshop atmosphere. The half hour spent at lunch in an Association cafeteria is a half hour of rest and recreation and, aside from the pecuniary success that has attended the enterprise, the cafeteria has been a boon to thousands and a real philanthropy in extending the spirit and hospitality of the Association.

### A Practical Manual

The "Handbook of the Association Cafeteria" is a valuable manual, compiled by Blanche Geary, which sets forth clearly under appropriate sections the standards arrived at in the organization, details of arrangement, and the administration of the Association cafeterias. The compilation is calculated to serve anyone in launching such an enterprise. The principles it has evolved are fundamentally sound, for, while these well known eating places have been a highly effectual channel for extending the welfare activities of the Association, the department has been a money making venture. Its success has been achieved in a difficult field and is contingent upon pleasing the quizzical public on a competitive basis with purely commercial enterprises.

The first essential in the location of a cafeteria is that it be central. This is necessary in order to reach quickly and economically those whom it is in-

tended to serve. Another important consideration is that the location, to be right, must be self-advertising. On location, perhaps as much as on good cooking, says Miss Geary, depends the size of the daily attendance. The two together spell profit.

Opinions differ in regard to the spaces required for the service and preparation of food. Some allow a space of eight square feet per person, while others claim that ten, twelve, or even fourteen square feet per person. The ceiling should be not less than fourteen feet high, and more if possible. The cafeteria counter needs to be placed in right relation to the kitchen, and must allow at least eighteen inches for each person standing in line at the service counter.

### Details of Equipment

Tables with pedestal in the center are desirable, as the chairs will not then be marred as they are when bumped against table legs. The usual size of the table top is two by 2½ feet for two persons and 2 feet 6 inches by 3 feet 2 inches for four, with a four foot space between tables for seating and three to three and one-half feet for gangways. The table top will be of wood, waxed, if inexpensive equipment is necessary; or of marble, white or black carrara glass if the best looking top may be had. Chairs must be strong, of light weight, without arms, and with a foot rail. Bentwood chairs are light and durable.

The checker's table and chair, the cashier's table and counter, and all arrangements for employees, whether high in price or inexpensive, are chosen with due regard to removing all undue strain. The water supply should be easily accessible from all parts of the room, and should be so arranged as to be clean and attractive at all times. The booklet sketches ideal layouts for both one and two way service, with definite specifications for steam stable, dispensers of various kinds, dish carriers, etc.

Precautions are always to be made in regard to plumbing. All pipe trenches should be boxed and provided with movable covers so as to be easily reached in case of trouble. Great point is given to the instruction of architects in regard to waterproofing the floors below the dishwashing space. The keenest judgment needs to be exercised in the placing of equipment. It is to be remembered that cookers radiate heat as easily on the cook's back as on

the salad table and that the size of the ice bill is closely related to the range in many kitchens, and that for want of planning, the garbage man and the scrubbing woman are often not on speaking terms.

Especial warning is issued not to over-equip. The cost of cleaning and repair is to be considered in securing and placing equipment, and every inch of space counts. Minute specifications are necessary in regard to the major considerations of refrigeration, ranges, working paraphernalia, and storage, but it is not to be overlooked that efficiency hinges also upon the provision and proper equipment of the cook's and scrubwoman's closet, and of the janitor's workroom.

### Quantities of Equipment

Equipment is required for one-third of the total service; twice as many teaspoons as forks will be needed, the silverware to be of the best triple plate of a simple design. Linen napkins are appreciated by the public and should be provided; the china should be harmonious, while some experts prefer a smaller size in each case, the Y. W. C. A. standards call for the following sizes: Dinner plates, 9 inches; breakfast plates, 7 inches; soup bowls, 6 inches; cups of teacup size; cream pitchers, 1½ ounce size; fruit saucers, 5 inches; butter pats, 3 inches.

The efficiency of the plant ultimately depends upon the cafeteria director. Her office should be within easy reach of the kitchen and dining rooms, and she should be in touch with every detail having to do with help, distribution of duties, purchasing of supplies, state of the accounts, the preparation of menus, and general administration. She needs to have personality plus technical training, and the knowledge that is gained only by close contact with the plant.

### Health Supervision at Algonquin

To safeguard the health of the people at Camp Algonquin whose expenses are paid by the Chicago Tribune Club, a medical staff of twelve of the leading physicians of Chicago, Oak Park, Elgin, and Cary, Ill., has been provided in connection with the *Tribune* Summer Hospital for Convalescents. Representatives of the Chicago Dental Society met with the staff to develop plans for the care of the teeth of the campers. Two dentists will correct whatever faults they may find, make recommendations for their care, and give lectures on dental hygiene.

\*The materials of this comment are drawn from the "Handbook of the Association Cafeteria," by Blanche Geary, published by the National Board of the Young Women's Christian Association.

# Standards of California Children's Institutions

THE whole field of child care in the institutions of California has been covered in a recent study out of which have evolved definitions and standards of practice. Herewith are presented the standards as adopted in April, 1921, by the State Board of Charities and Corrections of California:

(1) *Definition*.—A children's institution shall be defined as a place for the reception and full time care of (fifteen or more) children, the support of which is derived in whole or in part from public or private benevolence.

(2) *Governing Board*.—Where there are over fifteen children, the place shall be incorporated with a board of directors of at least seven members, at least four of whom shall be residents of the city or town in which the home is situated. The governing board must be responsible persons who feel a definite interest in the work and give personal attention to it. Board members failing to attend three successive meetings without good excuse should be dropped and replaced by persons who are able to give more time to the problems of the institution.

The meetings of the board of directors shall be held at the institution. The work of the board should be done, on the whole, through committees. These should be working committees, not merely nominal groups, and should include committees on admission, dismissals, finances, house, recreation, etc.

(3) *Buildings*.—The building shall meet the legal requirements of the county in which the institution is located, as to construction, material, safety, lighting, ventilation, sanitation, and fire protection. The upkeep, and particularly the housekeeping, shall conform to the average of the institutions of like character of this state.

Dormitories shall provide a minimum floor space of thirty square feet per child. Furthermore, there shall be a space of at least three feet between the sides and two feet between the ends of beds. The height of the ceiling shall be at least nine feet. The window space shall measure at least one-eighth of the floor space.

Plans for new buildings or parts of buildings must be submitted to the State Board of Charities and Corrections for approval before any contracts are let or work begun.

## (4) *Physical Care of Children.*

(a) A nourishing and properly balanced dietary shall be provided, a minimum of one pint of milk daily to be allowed each child.

(b) Formulas for feeding infants should be prescribed by a registered physician.

(c) There shall be frequent and systematic bathing of the children.

(d) A separate bed shall be provided for each child. Each bed shall have a good spring, clean comfortable mattress or its equivalent, and adequate bedding. Rubber sheeting when necessary.

(e) Individual toilet articles shall be supplied each child.

(f) The clothing of the children shall be clean, neat, and seasonable, and of a design, quantity, and quality to develop the self-respect of the child. Clothing should not be used in common. Each child should have his own supply.

## (5) *Medical Care.*

(a) A properly equipped infirmary, as well as isolation facilities, shall be provided.

(b) All entrants shall be segregated for a period of fourteen days following admission.

(c) A thorough physical examination, including nose and throat cultures, shall be made of each child by a competent physician prior to its admission to the institution, or during its detention in isolation quarters. This should be followed by remedial treatment when necessary.

(d) Vaccination of all children shall be enforced.

(e) Mental tests shall be made in all doubtful cases.

(f) Frequent and regular examinations of all children shall be made by a physician or licensed nurse.

(g) Institutions with a population of more than 100 children should have a trained nurse in residence.

(h) Dental examinations shall be made at regular intervals and corrective work done promptly. Tooth brushes shall be provided and their use enforced.

## (6) *Education and Recreation.*

(a) The education should conform with the requirements of the state and all teachers of the regular curriculum shall be duly licensed.

(b) Children shall receive moral and religious instruction, provided that no child shall be required to attend religious services or to receive religious instruction in a faith differ-

ent from that of its parents or guardian.

(c) A library of books suitable for the use of the children shall be provided and shall be regularly accessible to them.

(d) Playgrounds and playrooms, properly equipped with apparatus, games, and toys shall be provided.

(e) It should be the duty of some one officer of the institution to supervise and encourage play activities.

(7) *Discipline*.—There shall be no corporal punishment.

(8) *Classification of Children*.—Definitely wayward or feeble-minded children shall not be admitted to an institution primarily for the care of needy normal children.

(9) *Supervision*.—The superintendent shall be a person of such character and capacity as shall guarantee to the children control and companionship, and to the board and the state the responsible management of the institution and its inmates. He must not be required to collect funds, but should devote his time to the organization and conduct of the work of caring for the children.

(10) *Admission and Discharge*.—A careful investigation of each application for admission shall be made, to determine whether the best interests of the child will be served by admitting him.

A definite plan for follow-up of children discharged from the institution should be instituted.

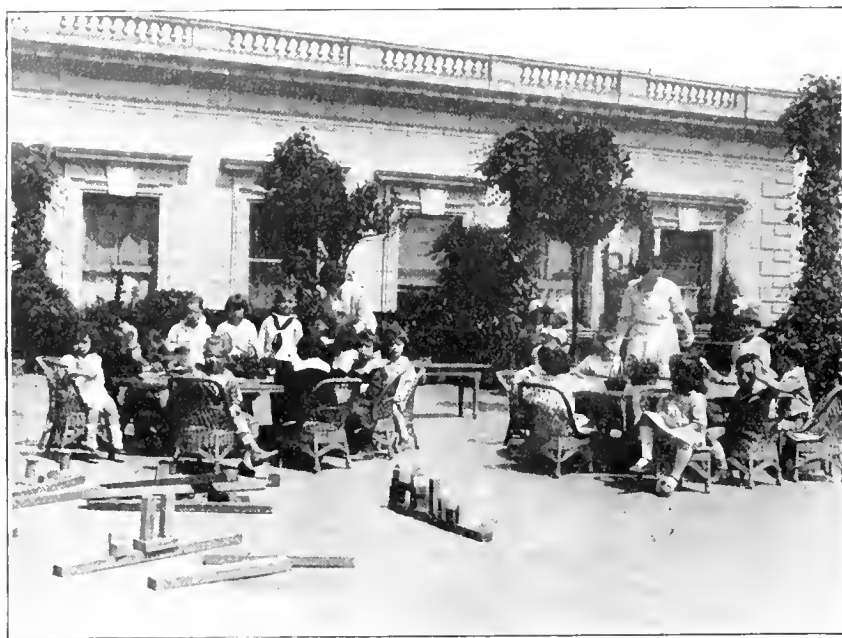
(11) *Accounting*.—All accounts shall be kept in conformity with the methods prescribed by the State Board of Charities and Corrections.

(12) *Records and Reports*.—Each institution shall keep individual social and medical histories of each child on the blanks prescribed by the State Board of Charities and Corrections, and shall render annual financial and population reports on the blanks prescribed and furnished by the State Board of Charities and Corrections.

## Mississippi Valley Conference On Tuberculosis

The ninth annual session of the Mississippi Valley Conference on Tuberculosis is called for September 12, 13, and 14, 1921, at Columbus, O., with headquarters at the Hotel Deshler. Programs of this kind become more and more vehicles of popular instruction in matters pertaining to public health.

## Open Air School on Hotel Roof



Underwood & Underwood.

An exclusive hotel in San Francisco has established an open air school on the roof. This makes it unnecessary for the children to leave the hotel at any time, and avoids the risks incident to passing the traffic on the crowded streets. Kindergarten and primary classes are conducted, and dancing is taught. This scene is in the classroom during play hour.

## Mental Measurements in Health Program

Significant deductions are made by E. J. Pratt in the April issue of *The Public Health Journal* on "Mental Measurements as Applied to a Toronto School." The object of the survey was (1) to estimate the mentality of the school as expressed by the Intelligence-Quotient of the individual children, (2) to discover by systematic groupings of the quotients, any correlations between mentality and social status, sex, nutrition and other factors supposedly related. The final aim of the survey was to correlate intelligence data of the children with their efficiency when later they enter industrial life.

Out of approximately 60,000 children investigated, over 1,000 children, something under 2 per cent of the total enrollment, presented problems of mental defect. The intelligence tests were supplemented by observations as to emotional peculiarities and the conclusions were drawn from 502 children examined, in whom supplementary information was procurable.

The results show conclusively the effect of social status upon intelligence. The professional class, for instance, furnish no mental defectives at all, and no mental retardation below 80 Intelligence Quotient. The children whose parents were day la-

borers comprise 45 per cent of the total; artisans, employers, etc., made up 52 per cent. Whether this higher Intelligence-Quotient in the better economic classes is due to hereditary or environmental conditions is a problem requiring more data for discussion.

Malnutrition was found in this series to bear a very marked relation to retardation and the statement is made that 40 per cent of the children suffered from malnutrition to such a degree as to cause a loss of nervous energy. In connection with malnutrition, the statement is further adduced that children of superior stock and intelligence seem to withstand the strain of malnutrition successfully. It was upon the lower levels that malnutrition had its greatest effect. Malnutrition as related to feeble-mindedness is a medical and biological problem requiring extensive inquiry.

As standardization in the field of mental tests is a comparatively recent development in psychology, there has not been much opportunity to study side by side, in statistical form, the industrial records of adults with the mental co-efficients of the same persons or children attending the public schools. A comparative inquiry into such results would be a factor not only in increasing the efficiency of school methods, but also in deter-

mining to some extent the selection of trades and professions, and would affect, reciprocally, the tests themselves.

## Trade War Masks As Public Health

The principles of conservation are far reaching in their application and include, along with saving in times of plenty against successive periods of dearth, measures to preserve in useful by-products materials which would otherwise be an economic waste. It is particularly along the latter lines that research work on national nutrition is being given such emphasis at the University of Oregon, and that the National Research Council's Committee on Food and Nutrition has recommended in its recent report a program for a national institute of nutrition.

In view of the need to apply scientific management to matters pertaining to the food supply, it is particularly inopportune that ill advised opposition from competing interests should attack, with specious arguments to Congress against pending legislation which opposes the marketing of compounds of skim milk and vegetable oil. So far as we know, these articles are honestly labeled and are advertised for what they are. They are not to replace certified products for infant feeding, but are specifically recommended for cooking and baking; if wholesome, edible, and frankly labeled, they make available an inexpensive food, and every consideration of public health and economics favors such mixtures.

Legislation against such products was attempted in the states of Washington, New York, New Jersey, and Pennsylvania, where the bills failed of enactment, and the present legislation in Congress must be regarded as directed toward the extermination of products of this character without justification from the public health standpoint.

## Creation of Milk Laboratory

The Government has created a branch of the council of departmental administration called the laboratory for the inspection and analysis of milk, with the following duties: The analysis of the milk sold to the public; the analysis of substitutes for mothers' milk; the analysis of products obtained by the use of lactobacillus; and the analysis of the milk of wet nurses. The laboratory will establish a standard to be maintained.



# THE NATION'S HEALTH

(Continuing MODERN MEDICINE)

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## Social Work Among the Physically Handicapped

Solution May Be Expected to Follow  
a Definite Estimate of the Problem

BY WILLIAM T. CROSS, SURVEY OFFICER, STATE DEPARTMENT OF PUBLIC WELFARE, CHICAGO, ILLINOIS

REHABILITATION as a common objective, or measure, of the varied types of community effort for the individual, is just shifting into focus. The passage of the Federal law and of thirty state acts for the rehabilitation of persons "injured in industry or otherwise," makes it desirable to inquire into the nature of the rehabilitation process. The term has been used for several years by those engaged in family social work. It will require reinterpretation, however, if it is to represent the underlying principle of work for physically handicapped persons. For the social worker it may come to signify a program which welfare agencies share with the doctor, the teacher, and the industrial manager; for the latter it may, in time, suggest a relation with the patient, the "trainee," or the employee, in which

*Last Thanksgiving the United Charities of Chicago issued a circular containing fourteen pictures of situations calling for charitable assistance. Among these were the five situations illustrated in this article, used through the courtesy of that Organization.*

*Social case work often discloses an insurmountable handicap at the point of destitution. In the case of military and civil injuries, precision and rational preventive measures can avoid the social and individual wrong involved in needless dependencies.*

end results are kept more constantly in view.

### As At First Conceived

The ideas of physical handicap and of rehabilitation first impressed the popular imagination when the country was struck with the pathetic vision of thousands of its young men disabled in the war. These ideas were a constructive substitute for the morbid thought of affliction. Alternatives were pensioning and national waste. Rehabilitation meant the conservation of man power. The definition, as a class, of those whose physical disabilities obstruct their economic and social functioning, and the formulation of a procedure for off-

setting their handicap, is without question one of the greatest gains in recent years in constructive community policy.

### A Natural Sequence

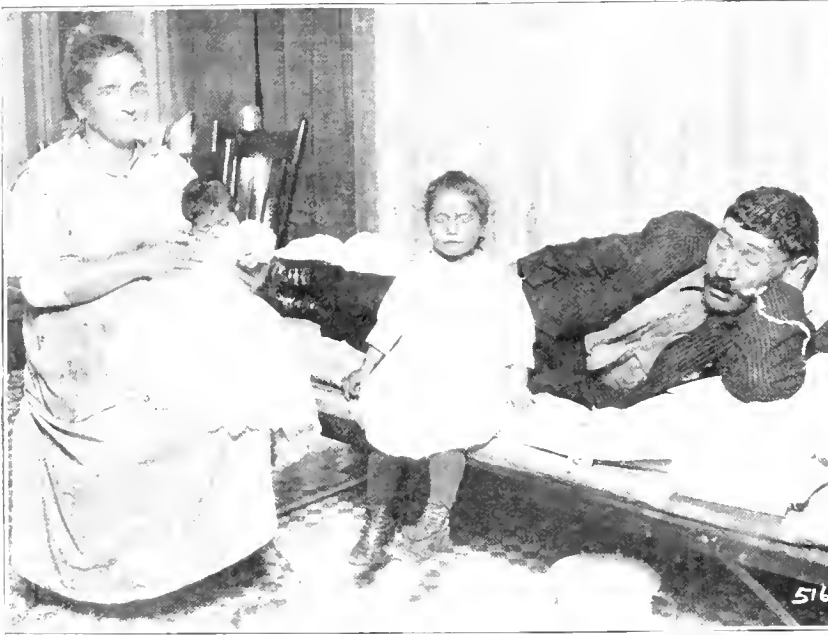
A natural sequel of wartime developments is the prominence of state and national governments in the early stages of the movement for the rehabilitation of the civilian handicapped. Under the plan established in the Fess-Kenyon Act, guidance and partial support is to be expected from the Federal Board for Vocational Education, according to the method of Federal aid to vocational education



The laborious efforts of this breadwinner are the sole means of maintenance of her family, including a sick husband.



The undernourished child is a fit subject for social study and remedial activities.



The father of this destitute family is afflicted with heart trouble and unable to work

in the states. Several states have made large appropriations to establish bureaus of rehabilitation. For the future it is important to inquire in what ways governmental methods may need to be adapted in dealing with problems of personal development and at what points they may need to be supplemented by that co-operation of individuals and voluntary agencies which is fundamental to all government undertakings.

#### Plan Should Suit Purpose

The purpose of the state is, by any means that may succeed with the handicapped person, to raise him permanently out of the class of community liability. The preferences of the individual must be consulted at all times as a matter of expediency. His maximum restoration physically, which is the starting point for plans of education and of employment, can be undertaken directly by the state only in a small proportion of cases. Formal training vocationally is impractical for a large percentage of the civilian handicapped because of their age, their degree of intelligence, their family obligations or other circumstances. The final step in rehabilitation, employment, depends upon the opportunities that may present themselves in a given community. In dealing with the disabled man's desires and with the requirements of private employers, only those plans that are plastic and adaptable are likely to be effective. The limitations of public activity are apparent.

That circumstances seem to require in some cases a plan of expe-

diency and adjustment within a congenial environment is illustrated in the experience of Butler James:

When Butler James sat down at the interviewer's desk, it was not observed for some time that he lacked both hands. He was colored, was twenty-three years old, and was married. His only child had died when a few days old. His wife was traveling with a white family, as a practical nurse. She was loyal to him. James had just been paroled from the state reformatory.

In his boyhood, he had lost his hands at the wrists, as a result of hopping trains. He migrated north to a large city, and fell into the drift of the unskilled, eventually being employed in the stockyards under con-

ditions which brought on rheumatism. His will was weak and his companions were bad. He participated in a robbery and was given the two-year sentence from which he was now returning. In the reformatory he had been given some schooling, but he had not been taught a trade. A psychiatric examination showed him to be eleven years old mentally. However, James had poise and an affable manner which tended to offset any backwardness and his evident laziness. He dressed carefully, in spite of his lack of hands, and said he was dependent on others only for tying his necktie.

A messenger's job was secured through the public employment bureau. At this he gave satisfaction for only a month. He was ambitious to go to Tuskegee Institute; however, the necessity of maintaining his family was recognized, and his lack of education seemed to make it more desirable to try for a business connection at once. He showed good sense about questions of management. He discovered a bowling and billiard establishment in which there was opportunity to set up a shine stand. With financial aid from interested groups, this was done. The head of the establishment took a personal interest and ways were found to make the arrangement pay, capitalizing James' capacity for getting on with patrons and employees, rather than his handicap. The work corresponded with the boy's wishes, and the sporting atmosphere harmonized with his early training and his temperament. In the large establishments were other positions to which the man might advance.

#### Analysis Called For

Shortly after the war I met an industrial engineer who had carried on an extensive survey preparatory to the employment of wounded soldiers who exhibited a certain type of dis-



Only intelligent social effort can save this family of a tuberculous father from the direst need

ability. By means of time and motion studies, and job analyses of standard industries, he had demonstrated that ample opportunity could be found for employment of men with this disability, according to the various gradations of mental type. But, when the war was ended, there did not appear an appreciable fraction of the number with this type of disability for whom possibilities of employment had been so carefully charted. In those cases that did occur, the men were not inclined especially to take up the pursuits that had been surveyed. The industrial engineer was aware that many hundreds of persons with this type of disability existed in the civilian population, but individually they did not follow any pattern of mental ability, age group, desire for employment, location, and family situation that would make possible a standard procedure of adjustment on the job, and the man was discouraged.

The rehabilitation of physically handicapped persons can be accomplished extensively only with the aid of some procedure which is built upon the differences in human nature and in life situations. It would be accomplished with the least expenditure of money and effort if all cases fell into a small number of classes, and if there were some assurance that the performance of specified medical and educational services would secure the results desired. Among cases of handicap in any community, however, problems of adjustment do not repeat themselves in identical form. Some are aware chiefly of their medical needs, while others are most concerned with getting a job. Handicapped persons frequently are diffident about receiving any constructive assistance because of false conceptions regarding their disabilities. They cannot be imagined as standing in line before a registration desk, ready to undergo any standard process of adjustment. Rehabilitation in each instance means finding the water, leading the horse to it, and perhaps making him drink.

### Social Survey Necessary

A procedure of dealing with varieties of human situations has developed in social case work. Where the medical, or vocational, or industrial agency is concerned with individuals, somewhat apart from their environments, the social case worker is accustomed to the treatment of the man in connection with his family and larger groups. The conditions which differentiate one case from another



This man was a hard worker, but an industrial accident made him permanently helpless.

are to him not a source of obstruction or confusion; they are the basis of his plan of treatment. A man's desires and his type of behavior are, by the social worker, continuously and persistently correlated with his economic success. In this way the technique of the social worker is adapted to the prolonged and composite kind of service that is necessary for ultimate rehabilitation.

### Public Health Nurses in Brazil

Brazilian journals are commenting very favorably on the introduction by Dr. Chagas of public health nurses. While their number is limited and their introduction comparatively recent, the results already shown from their work have impressed the public very favorably, according to the *Journal of the American Medical Association*, July 9, 1921.

### The Welfare of the Foreign Born



International Film Service, Inc.

Prominent club women of Chicago have undertaken to induct foreign-born mothers on the West side into the fine arts of domestic science. Keen to learn, the mothers are guided into new ways that lead to better adaptation of their households to new conditions of living in a foreign land. In this picture the children of these mothers are shown under the care of trained nurses in the station at 1115 Blackhawk Avenue.

# Cooperative Health Plan in New York County\*

## The New York County Chapter of the American Red Cross Has Affiliated All Existing Health Agencies

BY GEORGE R. BEDINGER, DIRECTOR, HEALTH SERVICE, NEW YORK COUNTY CHAPTER, THE AMERICAN RED CROSS, NEW YORK CITY.

**T**O STRENGTHEN and support existing Public Health Agencies is not only the aim, but also the achievement of the New York County Chapter of the American Red Cross since it entered the field of public health eighteen months ago. The Chapter's new Health Service was organized in January, 1920, as the result of a careful report made to the Executive Committee by a special committee<sup>1</sup> appointed to consider what activities, if any, the Red Cross on Manhattan Island should undertake in the field of health.

This Committee strongly urged the Chapter to make Public Health Work in the aid and coordination of existing Public Health Agencies, the major peace-time activity of the Red Cross. The Committee's report was unanimously approved by the Executive Committee of the Chapter, and this group of health experts has continued as the permanent Health Service Committee of the Chapter. Dr. Livingston Farrand and Dr. Erwin A. Peterson of National Headquarters, American Red Cross, are ex-officio members. The program of the Red Cross Health Service as outlined in detail by this Committee consists mainly of a broad statesmanlike plan of public health education and information, under which the Red Cross is performing certain joint services for the public health agencies of the city, activities which it would be difficult for any one agency to do so well for itself alone.

Among these common services,

offered without charge by the local Red Cross Health Service, are:

(1) A Bureau of Public Health Information through which any interested person can secure up-to-date information in regard to all phases of Public Health activity in New York County. That this Bureau fills a real need is shown by the fact that since its opening on March 31, 1920, the number of questions and specific requests for health literature has reached a total of 8,862. This health information is being constantly kept up-to-date.

(2) Real Red Cross cooperation is also shown by our assistance to agencies in the production of their Health Leaflets.

The Red Cross has already made possible the printing, in answer to direct requests, of more than eight hundred thousand health leaflets. The eight agencies for whom we have been privileged to do this service thus far are: The New York Tuberculosis Association, The Maternity Center Association, The Association for

Relief and Prevention of Heart Disease, The New York Urban League, The American Social Hygiene Association, The Child Health Organization of America, the New York Nutrition Council, and The Federation for Child Study.

(3) Another cooperative enterprise is a Health Speakers Bureau, designed to "act as a clearing house through which all public health agencies can find opportunities for their lecturers to speak, and through which local groups of any kind desiring to arrange public health lectures, can secure qualified lecturers, or a series of lectures, if desired."

This Bureau, organized in the New York County Chapter in May, 1920, and in the Brooklyn Chapter in July, 1920, has arranged 926 health talks to June 1, 1921. One hundred seventy-two speakers from eighty-four agencies have supplied these talks without fee. The estimated attendance at these health talks arranged by this new Bureau is 128,737. Many organizations wished a series



The East Harlem Health Center is a demonstration in cooperative health work, where various agencies exercise complete autonomy in their several fields, but are brought together for administrative purposes. Planned as a national health demonstration, every facility is provided to test the efficacy of the method.

\*Read before the Division of Health, National Conference of Social Work, Milwaukee, Wis., June, 1921.

1. This Committee is composed of the following: Dr. James Alexander Miller, chairman, president, New York Tuberculosis Association; Dr. Hermann M. Biggs, New York State Commissioner of Health; Mr. Bailey B. Burritt, general director, Association for Improving the Condition of the Poor, New York City; Dr. Haven Emerson, former Commissioner of Health, New York City; Mr. Homer Folks, secretary, New York State Charities Aid Association and former Executive Officer, New York County Chapter, American Red Cross; Mr. John M. Glenn, director general, Russell Sage Foundation; Dr. L. Emmett Holt, chairman, Child Health Organization of America; Dr. Edward L. Keyes, Jr., president, Medical Board, St. Vincent's Hospital; Dr. Thomas W. Salmon, general director, National Committee on Mental Hygiene; Dr. William F. Snow, general director, American Social Hygiene Association; and Dr. Philip Van Ingen, chairman, American Child Hygiene Association.

of five or more talks arranged for them. I am glad to report to the Conference that the Health Speakers Bureau organized by us in the Brooklyn Chapter has made a larger record than the parent Bureau in New York County. The types of audiences can be imagined when it is known that these talks were distributed as follows: Churches, seventy-four; settlements, twenty-three; "Y's," thirteen; schools, thirty; shops, fifty-six; miscellaneous, thirty-two.

### Services Are Various

Let me mention two other Red Cross services designed to assist public health activities.

(4) Up-to-date mailing lists of groups interested in various phases of the Public Health Program, have been compiled and placed at the service of other agencies. The total number of names included in the twenty-two mailing lists which have been carded and stenciled is now 9,712. Included in this list of associations, churches, clubs, schools, health and social agencies, etc., is a very valuable consolidated list of directors and executives of eighty public health agencies numbering 1,206 names and a list of employers having a health service numbering 780 names. These lists have been used 272 times by fifty-one different organizations.

(5) A personnel center for volunteer workers in various health connections, such as clinical secretaries, assistants in nutrition classes, maternity centers, etc., is in full swing. It was begun by the Health Service and is now under the Department of Volunteer Service. During the last twelve months 312 volunteers have been assigned for health work in the Chapter and in such hospitals as Bellevue, Polyclinic, New York Nursery and Child's Hospital, Manhattan Eye, Ear and Throat and St. Luke's. Volunteer auxiliaries are in process of formation for ward workers and clinical aides in twelve other health agencies.

Another way in which the Red Cross Health Service helps the Public Health Campaign is by its general publications on health information. I mention only five, but these are representative.

Copies of these and other publications of the health service can be obtained upon request.

(1) The compilation of a directory of Public Health Agencies in New York County. One thousand copies have been distributed and a revised edition of five hundred has been prepared.



A dramatic phase of "Every Child in Elfland," a dental playlet given at Christodora House by the children of Red Cross Child Health Station No. 1.

(2) A directory of dental clinics and dispensaries in New York County, two thousand copies.

(3) Publication in attractive booklet form of a careful survey of nutritional activities in New York County showing the organization and methods of the various nutritional clinics in out-patient departments of hospitals; nutrition classes and hot lunches in public schools; and nutritional activities conducted by organizations such as settlements, churches, and social organizations, two thousand copies, prepared in cooperation with the Child Health Organization of America.

(4) The preparation and publication of a health map of Manhattan showing by symbols the types of health institutions and by colors the special health activities carried on in each institution; some 950 copies of this map have been distributed. They have gone to all hospitals, dispensaries, settlements, public health and social agencies in Manhattan, and also copies of this health map are displayed in every branch library, railroad and ferry station and many department stores on Manhattan. National Headquarters of the American Red Cross and the Atlantic Division have been sent copies of the map at their request.

(5) Publication of a directory of dispensary facilities in New York City, prepared by the Dispensary Development Committee of the United Hospital Fund, two thousand copies.

When the above program support-

ing the work of Public Health Agencies had gotten well under way, the Health Service Committee, after detailed study of four different sections of New York, recommended to the Executive Committee that the Chapter engage in actual administrative health work. This recommendation was approved by the Executive Committee of the Chapter, and on September 30th, 1920, was confirmed by National Headquarters of the American Red Cross. This administrative health work is taking two forms:

(1) The establishment of a Community Health Center to demonstrate the methods and the value of the coordination of all health and kindred activities in a defined local area including about one hundred thousand people. The East Harlem section of New York, extending from One Hundred and Fourth to One Hundred and Twenty-Fourth Streets, from Third Avenue to the East River, has been selected and three buildings on One Hundred and Sixteenth Street, in the exact center of the district, have been bought and are being remodeled for the health center building.

It is proposed to bring together into this health center for local administrative purposes, and so far as practicable for operating purposes, all the existing health and family welfare agencies doing work in the district. The buildings are provided and will be operated by the New York County Chapter; needed space with light, heat, telephone and janitor service is given rent free to agencies who are





"A Family Meal," staged in a nutrition health playlet given at Christodora House in March.



Weighing and measuring in as conducted at Red Cross Child Health Station No. 2, Greenwich House, 27 Barrow Street.

invited to cooperate in the health center; each agency, however, retaining its complete autonomy within its particular field. Arrangements have also been made to secure the establishment of such additional health activities in this selected district as will, with those now existing, constitute a fairly complete health program. The health center is controlled by a council, composed of representatives from each agency operating in the center together with a certain number of representative citizens, preferably residents in the district, and a certain number of representatives of the Executive and Health Service Committees of the New York County Chapter, American Red Cross. The executive officer of the health center, who is secretary of the council, has been appointed by the New York County Chapter and approved by the council. The East Harlem Health Center is planned as a national health demonstration. Every facility will be given those who wish to visit the center or learn of its details.

(2) Three Red Cross Child Health Stations in sections of Manhattan where the need is greatest and where the chapter can secure the largest co-operation from some existing agency, such as a school or settlement, have been established. Each station conducts nutrition classes for under-nourished children, dental hygiene and dental clinics. These Red Cross Child Health Stations have been in operation some months. The first was opened on October 25 in co-operation with Christodora House, on the lower East Side; the second was opened on November 14 in cooperation with Greenwich House, on the

lower West Side; and the third is at public school No. 43, Manhattan, One Hundred and Twenty-ninth Street and Amsterdam Avenue. The third station is part of an interesting demonstration being carried on at public school No. 43, to give an effective health service to a typical public school. The demonstration is made possible by the close cooperation of the Bureau of Child Hygiene, Department of Health, Teachers' College and the American Red Cross. In this demonstration the Red Cross provides and conducts dental hygiene and dental clinics in the school building and conducts nutrition classes for the children in cooperation with Teachers' College.

### Municipal Cooperation

Finally, the health service is assisting the City Department of Health in three ways at the special request of Commissioner of Health, Royal S. Copeland, M.D.

(1) Tabulation and analysis of statistics of mortality and morbidity from 1916 to 1920, inclusive, for the 224 sanitary areas into which Manhattan is divided for purposes of the Department of Health and the U. S. Census. This work is being done by two clerks paid by the Red Cross, who are given a room at the Health Department. Their work is directed by a special committee of statisticians.

(2) The Health Service of the Chapter has appropriated a sum of money to assist the Health Department in making a demonstration in the immunization from diphtheria of approximately 52,000 public school children by the Schick Test. This has been carried on this spring with the personnel of the Health Department, the Red Cross supplying the salaries and receiving weekly reports on results. A very large number of consents have been secured from the

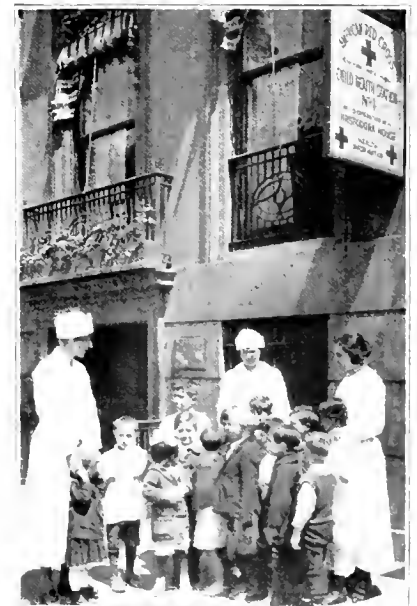
parents of the children and approximately 30 per cent of the children have been found to be susceptible to diphtheria so that the local chapter of the Red Cross may feel that it has prevented more than fifteen thousand children in New York City by this demonstration from contracting diphtheria, who were found susceptible to it.

(3) The Health Service of the Chapter has opened five dental hygiene clinics in public schools in Manhattan to demonstrate to the Board of Estimate that there should be a dental hygiene clinic in every school in New York City.

This work on vital and sickness statistics; this demonstration of the Schick Test to determine the susceptibility of children to diphtheria; and the placing of dental hygiene clinics in certain public schools were all planned for in the budget of the Health Department. At the last moment the appropriation for these objects were struck out by the Board of Estimate; the Health Commissioner turned to the Red Cross for assistance, National Headquarters gave us a special appropriation to do some of this work and the Junior Red Cross also gave us funds for two of the dental hygiene clinics. The results both in the work and in cementing cordial relations with the Health Department have been most gratifying.

To sum up:

The promotion of health activities in New York County as well as co-operation with existing health agencies are the absorbing interests of our Red Cross Health Service and give this work its peculiar fascination. The New York Nutrition Council is an example of our interest in the promotion of health activities. This Council representing now nearly ninety agencies in and near New York City was formed last fall, and has held twelve meetings with attendance from



Many of these children have for the first time consistent supervision in fundamental health practices.



fifty to three hundred and has greatly stimulated and standardized methods in this most popular subject of malnutrition among children. Our Chapter largely assisted the formation of this new informal Council and has printed its first publication—a valuable bibliography of nutritional subjects.

To illustrate once more our interest in cooperating with health agencies let me say just a word about a demonstration now being carried on to give a health program to pre-school age children in New York. At the suggestion of Dr. Ira S. Wile, the Departments of Education and Health, Teachers' College, and the American Red Cross are uniting in making a demonstration group of one thousand children physically ready to enter school in September. During June in eight selected public schools these pre-school age youngsters, about one hundred and twenty-five in each school, are being examined by the Department of Health physician; they then receive mental tests from psychologists from Teachers' College; they have their teeth cleaned by the Red Cross dental hygienists, and it is the job of the Red Cross nurse to see that the necessary follow-up work is done this summer for the removal of physical defects.

While in less highly organized communities it is quite proper and indeed necessary, for the American Red Cross to embark itself on health activities, it seems to me that in the very highly developed communities, such as the largest cities, the plan above outlined seems the most profit-



The children of Christodora House neighborhood, weighing in and having their teeth examined, on Health Rally Day. One thousand fathers, mothers, and children were in attendance.

able kind of Red Cross Health Service.

It will be seen that the entire health program of the New York County Chapter, American Red Cross, then is one of cooperation; that no health activities are undertaken alone; that no Health Service is provided without securing the cooperation of some other organizations, much of this service being undertaken at the special request of other health agencies. To supplement and not supplant the public and private health activities of the city is the motto of this new Red Cross service.

In closing may I share a thought with you? When the records of the Surgeon General's office during the Great War showed that approximately every third man was rejected by the Draft Board because he was physically unfit to fight for his country, a National health emergency had arisen. The answer of your American Red Cross to this National health emergency was the organization and development of its Health Service. With the main features of the Health Service you are quite familiar. The splendid activities of the hundreds of public health nurses throughout this far flung country of ours are well known. Already there are more than four hundred health centers in our Country supported wholly or entirely by Red Cross personnel and funds. You know of Red Cross classes in Home Hygiene, in Home Dietetics, in First Aid and Life Saving. In my paper I have outlined the type of Health Service being developed in some of the larger Chapters. Can we not now catch a vision of what

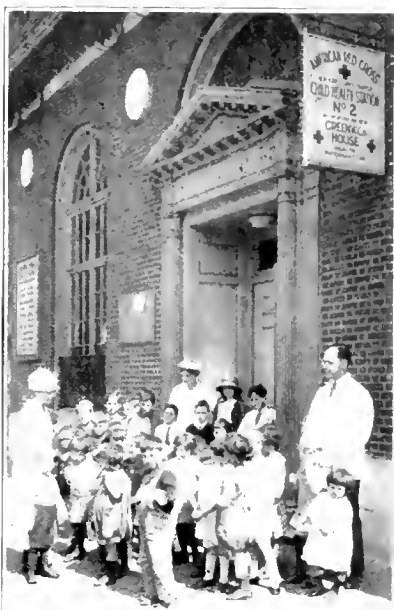
it will mean for the future of our country and our people when behind all the Public Health Programs of the country there is the swing of our great National American Red Cross?

### Compiles Information on Funds for Research

The Research Information Service of the National Research Council has recently compiled information about funds for scientific research. From this compilation it appears that there are hundreds of special funds, trusts, or foundations for the encouragement or support of research, in the mathematical, physical and biological sciences, and their applications in engineering, medicine, agriculture and other useful arts.

So numerous have been the requests to the Research Council for information about sources of research funds, availability of support for specific projects and mode of administration of particular trusts or foundations, that the Research Information Service has created a special file which it is proposed to keep up to date in order to answer the questions of those interested in such funds. Furthermore, in order to give wider publicity to the immediately available information about research funds, the Council has issued a bulletin under the title "Funds Available in 1920 in the United States of America for the Encouragement of Scientific Research."

Inquiries concerning the bulletin or for information should be addressed, National Research Council, Information Service, 1701 Massachusetts Avenue, Washington, D. C.



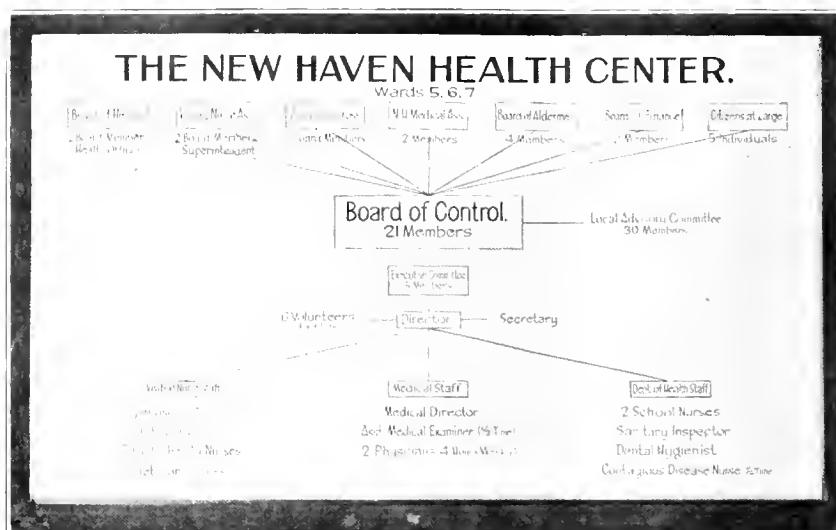
Red Cross Health workers and their charges at the entrance of Greenwich House. Competitive efforts pave the way to health.

# A Health Center with Emphasis on Health

Public Health Will Be Achieved Only  
When It Becomes a Popular Objective

By PHILIP S. PLATT, M.A., C.P.H., DIRECTOR, NEW HAVEN HEALTH CENTER, NEW HAVEN, CONN.

THE day is coming when the well person will take his annual health examination as naturally as he balances his bank book. This day, remote no doubt, will be hastened when health centers become points from which health knowledge, enthusiasm, and inspiration radiate and proper understanding is given to the well or the slightly indisposed person. Whether a conscious or unconscious, "Will to Health" can be stimulated in people may be doubted by many. That it is most difficult, if not impossible, to create such an attitude of mind from a center where, because the treatment of the sick is practised, the major emphasis is necessarily on sickness, is admitted by many who are striving toward the development of a positive ideal of health. The health centers where dispensing of medicine is not practised, where the medical and physical examinations are intended for individuals who are well or only "indisposed," and where briefer health consultations are available at any time, are still very few in number. Among these is the New Haven Health Center.



The New Haven Health Center organization properly coordinates the health workers while preserving the community contacts that mean community interest.

It is definitely aligned on the side of the normal person or the person who is only slightly indisposed. It does not give medical treatment but acts as a listening post or detector of the early beginnings of disease, and then as a clearing house, referring individuals needing medical at-

tention to their own physicians, or if that cannot be done, to the dispensaries and hospitals of the city.

There is also significance in the fact that it is a cooperative effort. The four principal health agencies in the city organized it and support it, namely, the Board of Health, the Visiting Nurse Association, the American Red Cross and the New Haven Medical Association.

In this brief article there is no space for a description of the origin, organization, purpose, activities, and accomplishments of the Health Center, though a part of this information may be gained from the accompanying photographs. Certain it is that the first twelve months just passed afford altogether too short a period to permit an evaluation of the work accomplished.

The district itself is predominantly Italian, a bare third of the twenty-seven thousand residents comprising other nationalities, such as Irish, American, Polish, and Jewish. It is composed of three well defined city wards covering about three hundred and sixty acres and seventy-five city blocks, in the shape of a triangle, and measuring a little less than a mile along the base and a little more than a mile along the perpendicular. Three neighborhood houses, an important boys' club, the Y. W. C. A., six schools, seven churches, and three



Organized in July, 1920, the New Haven Health Center serves a population of 27,000. Over 69,000 health promoting services have been performed by the staff of twenty workers during the first year. No medical treatment is given, but it is a clearing house which promotes health habits.



A prize fighter formerly ran a saloon in these quarters, where infant welfare conferences are now held. In the background, behind the partition, are the medical offices, where physical examinations are made and the prenatal service held. There are five other well-baby conferences in the Health Center district.

parks and playgrounds complete the picture of this heavily congested, old section of the city, now given over to industry, commerce, and habitation.

The activities of the Health Center fall into two groups: those which are definitely attacking disease and those which are endeavoring to conserve health. In the attack upon disease the Health Center is officially delegated by the Health Department with the responsibility for the control of communicable disease. It is caring for the bed-ridden sick through generalized, localized, visiting nurses. The early recognition by means of physical examination of conditions needing medical attention, and the bringing of the individual needing medical care in touch with his doctor or dispensary, is a direct attack upon disease in its earlier stages.

### Physical Inventory Urged

The effort to conserve health in the healthy is made through the physical examinations of well people, through readily available health consultations, through well baby conferences and the prenatal clinic, through special health classes, through educational work of health talks, leaflets, posters, lantern slides, and window exhibits. The supervision of the health of the school child by the school nurses, the medical inspection of the children (children absent from school more than three days are medically examined at the Health Center

before being permitted to return) and the far reaching educational work of the school nurses, the dietitian, the dental hygienist, and sanitary inspector are further health constructive measures. The use of prophylactic measures to protect against disease is slowly being accepted by the district. Community interest in health matters is being

aroused through a local advisory council of thirty citizens, residents in the Health Center district, whose advice is sought and freely given on matters concerning community interests or cooperation.

The educational work of the Health Center has been carried on in a variety of ways. Among other interesting novelties has been the use of the automatic attract-o-scope. This was placed in one of our four sidewalk windows. The lantern slides used in this attract-o-scope gets across to the man in the street such striking health messages as the following, which, serially tell the story of the activities of the health center and what it has to offer him:

Are you 100 per cent fit? If not, come inside and find out what to do about it through a medical examination made on appointment, free of charge.

Nobody loves a sick person. The person who is not 100 per cent well owes it to himself and his family to get well. Start right with a yearly medical examination.

One-half of the sickness in this district is preventable. Why not prevent it by (1) Sound living habits; (2) Early recognition of disease; (3) Proper medical and nursing care.

To bring health within the grasp of all. This is the Health Center Motto. Are you doing your share?

Alternating with these captions are attractive colored lantern slides dealing with health subjects. It goes without saying that the attract-o-scope attracts. Its appeal to the



An Italian fruit store was transformed into the reception room of the Health Center. In the rear are the offices of the director and of the supervisor of nurses, and of the sanitary inspector. Through the passage way to the adjoining room may be seen the laboratory.

children is irresistible, and once a nucleus is formed around the windows every passerby stops to see a number of slides.

### How Center Is Financed

The financing of the Health Center has been distributed between the organizing agencies in an interesting manner. The Department of Health is contributing at the rate of \$10,700 a year in addition to detailing a staff

of four workers at a cost of \$5,400. The Visiting Nurse Association is detailing a staff of ten at a cost of \$15,120. The American Red Cross has in the past met the cash deficit of the budget, having contributed \$17,400 for a period of a year and three quarters. The budget for next year is \$38,040.

Statistics show inadequately the real work that is done by any health center. Much of the most valuable work that is done cannot be so con-

veniently labelled and counted. However there is some significance in the fact that more than 69,000 health promoting services were performed by the Health Center during the first 12 months of its activity.

It would seem that the time has come for a more aggressive concern with positive health ideals, and that among other agencies the health center has an unprecedented opportunity to emphasize this constructive point of view.

## Health Stunts to Interest Everyone

BY LEONHARD FELIX FULD, LL.M., PH.D., NEW YORK CITY

**F**ACULTIES unused become faculties atrophied. We are fortunate if we are able to realize our objectives. We cannot rightly expect to exceed them if we fall short of consecutive, consistent effort toward a given goal. This is true of mental achievement, but it is especially true in matters pertaining to health. If the body is to be a serviceable instrument, it must be trained to control, response, and steadiness. The use of the daily health stunt, particularly if it can be embodied in a game or utilized in the spirit of fun, is of the greatest value. Here are a few old exercises put to new uses.

*No. 1. The Sit Up and Stand Up.*—Are you going to the beach today? The sea breeze will refresh you. What will you do at the beach? Take a dip in the surf and loaf on the sand? Get some lasting benefit from your day at the seashore. Practice a health stunt.

Your bathing suit gives you a sense of freedom which you cannot enjoy in your street clothes. The soft sands are admirably suited for exer-



Fig. 2. Second position in the "Sit up and stand up" exercise. This is a waist-reducing stunt.

cise. How do you get up in the morning? Do you make a football of yourself before you roll out of bed like

a sailor? Lie flat on your back on the sand with legs extended in front of you. (Fig. 1). Fold your arms across your chest. Bend at the hips and sit up. With arms still folded stand up on the sand (Fig. 2). Do you find this a little difficult? Why can you not do what most children can do? Has long continued sitting robbed your abdominal muscles of strength? Is your waist no longer the shortest circumference of your body next to your neck? This stunt will reduce your waist. It will cause your unsightly paunch to disappear. It relieves many of their constipation. Practice the sit-up and stand up on the sand with your friends. Who can do it most gracefully, most rapidly, most perfectly? Perform this health stunt every morning upon arising from bed. Get lasting benefit from your day at the seashore and note the improvement in your general health. Practice a health stunt daily.

*No. 2. The Yellow Dog.*—Did you practice the sit up and stand up on the sand when you last went to the seashore? Do you practise this movement every morning in bed before



Fig. 1. The daily practice of the "Sit up and stand up" stunt is progressively beneficial.

Fig. 3. When you can walk like a dog with facility, you will enjoy it. Your friends will enjoy it, too.

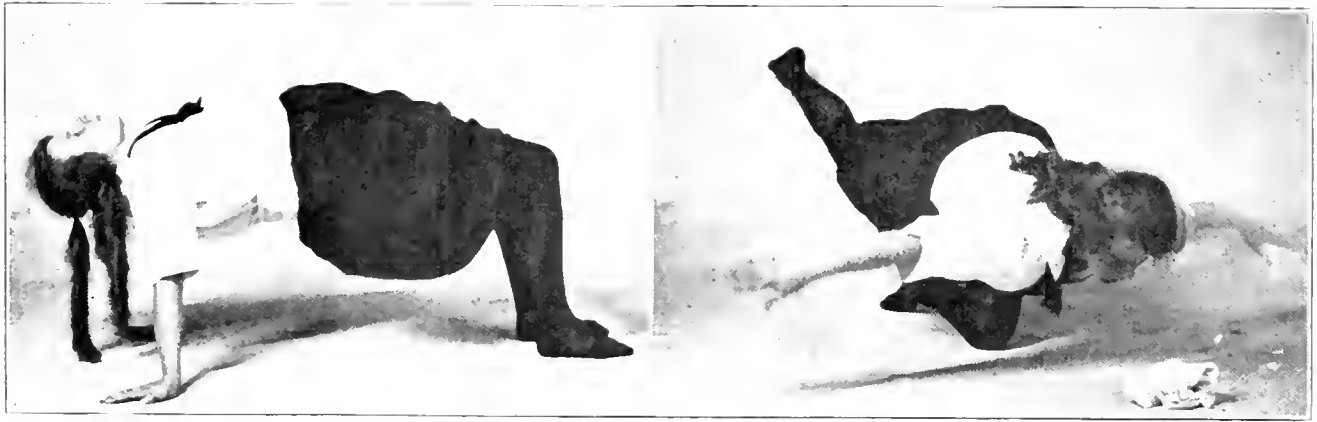


Fig. 4. This exercise will fill up the hollows in your chest

Fig. 5. Make your muscles serve you instantly, completely, unhesitatingly, unflinchingly which means perfect coordination

arising? Are you deriving benefit from the sit up and stand up? Are you planning to go to the beach again? Will you learn another health stunt? Try the yellow dog. Get down on all fours on the sand. Make yourself as long as you can. Hold your head, your shoulders, your hips high (Fig. 3). Be a proud dog. You can do everything a dog can except wagging a tail. Walk on the sand on your hands and toes like a dog. Do you know how a dog walks? Watch and learn. Which of the four legs comes forward first? Which next? Which next? Which last? Walk slowly at first. Practice the dog's ways. When you can walk like a dog with facility, trot along more rapidly and enjoy it. Your friends on the beach will enjoy it too. Are you getting winded? Learn to breathe properly. Breathe rhythmically, regularly and deeply. Are your arms getting tired? Are your shoulders getting too heavy for your arms? Hold up your shoulders and develop your arms. Try the Yellow Dog with your friends. Who can walk furthest? Who fastest? Who can best imitate a dog? Don't lie lazily on the sand all day. Get physical benefit from your trip to the beach. Learn a health stunt. Try the Yellow Dog.

### Transfers the Load

*No. 3. The Crab.*—Do you carry a knapsack on your back? Not one like soldiers carry, but one of flesh and blood? Most of us office-workers carry one. When you buy a suit of clothes does the salesperson smile engagingly to you and say: "I'll get the tailor to make this fit better around the shoulders." You know what that means! Would you like to transfer that knapsack from your back to your chest? Plenty of room there. Fill up the hollows of your chest. Try the crab on the beach to-

day. Bend your knees as if you wished to sit on your heels. Now bend backward until your hands touch the floor (Fig. 4). Arch your back and hold your head up.

This is the crab. Walk slowly and stately on the sand on all fours in this position. Who of your friends can walk the crab most rapidly? Breathe deeply and regularly. Walk the crab each morning from your bedroom to the bathroom. Move that knapsack from your back to your chest. Isn't it more comfortable?

### A Test of Sobriety

*No. 4. The Fishhawk.*—Have you ever walked the ties of a railroad track? Were you a little unsteady? Did you ever walk a trestle? A bit shaky?

Do you know the old police test of sobriety? It was the ability to walk a crack in the floor. Can you walk the crack? You are sober, why do

you find it so hard to accomplish? Have you been inactive so long that you are muscle-bound?

Develop your balancing ability. It will come in useful. It may enable you to save your life. Practise the fishhawk on the sand. Kneel on one knee. Keep your other leg and both your arms off the sand. Place a handkerchief on the sand in front of your bent knee. Balancing yourself on your bent knee, swoop down like a fishhawk and pick up the handkerchief from the sand with your teeth (Fig. 5). It is fun. It is good for you. It is useful. Make your muscles serve you instantly, completely, unhesitatingly, unflinchingly. Practice the fishhawk every morning on arising. Pick up at least one article of your clothing in this manner each morning. Strive for perfect coordination of nerve and muscle. Are you sober? Then walk the crack. The fishhawk will help you.

## Drug Addict Camp for New York



International Film Service Co., Inc.

The use of Pelham Bay Naval Training Station has been secured by the City of New York as a camp for drug addicts. The station now has only about fifteen hundred naval men there. Arrangements can be made for the care of 14,500 drug addicts. Ideal conditions prevail for the handling of such cases under the staff of physicians, nurses, and attendants in charge of the camp.



# International Training at Bedford College

By KATHERINE OLMSTED, DIRECTOR OF PUBLIC HEALTH NURSING, LEAGUE OF RED CROSS SOCIETIES, GENEVA, SWITZERLAND

**A**NOTHER International Course in Public Health Nursing will be given in London. The League of Red Cross Societies has recently completed arrangements with Bedford College for Women, University of London, to give a nine months' course in Public Health Nursing for International Students to begin October 6, 1921.

This course has been established in order to seek out in all countries the nurses who by reason of intelligence and training may become leaders in the evolution of nursing ideals in their own country. These women will receive the necessary knowledge and inspiration, so that, upon their return, they may become pioneers in Public Health Nursing in countries that service is just being initiated. In countries where nursing is well developed, by reason of their greater knowledge, they will strengthen the world-wide nursing bond.

During the past year nineteen students from eighteen countries have taken a similar course at King's College for Women, London, under the auspices of the League of Red Cross Societies. These students will shortly return to their countries as well trained leaders and staunch advocates of better and more efficient public health nursing services.

Scholarships are being given by the Red Cross Societies of many different countries so as to enable their nurses to attend. The Red Cross Societies of Japan, New Zealand, China, Great Britain, and Bulgaria have already signified their intention of sending nurses.

The amount of each scholarship is 250 pounds sterling which will cover tuition, laboratory fees, and special fees to the college, board, residence, books, laundry, necessary transportation and incidental expenses connected with the course. Travelling expenses to and from London must be furnished in addition to the above sum.

Many inquiries are being received from nurses who wish to attend the course at their own personal expense. Nurses have recently inquired from Poland, Denmark, Mexico, England, Switzerland, and Canada.

The following qualification are laid down by Bedford College for Women

and by the Department of Nursing, League of Red Cross Societies:

*Age.*—23 to 40 years of age.

*Education.*—Evidence must be produced showing continuous education up to the age of 18 years.

*Training.*—The student must possess a diploma or certificate as regulated by the highest nursing standards of the country which she represents.

*Health.*—A medical certificate of general good health must be produced.

*Reference.*—Should be given in evidence of good character and efficiency. Red Cross Societies selecting students must pay particular attention to the necessity for unusual intelligence to enable them to profit by a course which is necessarily intensive.

*Language.*—The students must be sufficiently familiar with the English language to follow lectures and take notes.

A Form of Application must be filled in and returned to the Director of the Department of Nursing of the League of Red Cross Societies.

*Session.*—The College Session opens in October and closes in July.

*Holidays.*—Short holidays will be allowed at Christmas and at Easter during which time the student will have ample opportunity to visit the points of interest in and about London, under the direction of the League representative.

*Certificate.*—At the end of the session a final examination will be held

and, if successfully passed, will entitle the student to a certificate.

*Residence.*—Comfortable living arrangements have been made by the League of Red Cross Societies for all students attending the course at a very nice family hotel near the College. The syllabus of the course follows:

## Theoretical Work

1. *Hygiene and public health.*—Tuesday and Friday, 9-10 (60 hours).

1. Personal Hygiene: Importance of cleanliness, exercise, sleep, etc.

2. Community Hygiene. Water supply, sewerage, milk supply, housing, sanitation, etc.

3. School Hygiene: Physical conditions affecting health, indications of ill health and defects, effects of fatigue, employment, etc. Recreation: care of defective, retarded, abnormal children, schoolroom sanitation.

4. Hygiene of special senses: Eye, ear, nose, throat structure, mechanism, preservation, treatment dangers.

5. Prevention of communicable disease: Micro-organisms in relation to disease—modes of attack, resistance of body, disinfection, etc.

6. Oral hygiene: Importance of care of teeth.

7. Maternity, Infant and Child Care:

a. Principles and organization of Child Welfare work; growth and de-



A nine months intensive course is provided for international students of nursing at Bedford College, University of London





The course is highly intensive and offers unusual opportunities for such matriculates as are intelligent and have the necessary background to take advantage of its opportunities.

velopment of child, mentally and physically.

b. Ante-natal Hygiene: Cause of mortality in infancy; directions for maintenance of health.

c. Care of Mother and Infant: Symptoms of ill health; common infant ailments, treatment and care. General care of infant, feeding, bathing, clothing, etc.

d. Food Values, Dietetics, Nutrition:

d1. Principles of Diet.

d2. Hospital Dietetics.

II. *Teaching of Hygiene*.—Five lectures in third term (time to be arranged).

1. Theory and practice of education.

2. Practice in Teaching: Health talks to mothers; teaching health to school children.

3. Value of Visual Education: Illustration of health facts, publicity and exhibit methods.

III. *Elementary bacteriology*.—Five lectures, followed by practical work, in first term, Tuesday, 2-4.

IV. *Elementary psychology*.—Including infant psychology, 30 lectures, Tuesday, 10-11.

V. *Modern industrial conditions*.—(Including industrial problems), Thursday, 10-11.\*

\*VI. *Social Administration*.—Thursday, 11-12, followed by a discussion class, 12-1.

### Practical Work

The practical work will cover two and one-half days a week.

\*Attendance in the second and third terms, when the lectures will be on English conditions and local government, will be optional.

I. *Attendance* at child welfare centers, day nurseries and children's hospitals, enabling students to study physical conditions of large numbers of infants and children, helping generally in all activities of clinic, such as weighing, filing records and home visiting. One day weekly.

II. *Attendance* at a tuberculosis dispensary.

III. *Experience* with district nursing associations in city district in order to get some insight into practical bedside nursing work in the homes.

IV. *Experience* in School Hygiene work—physical examination of children, home visiting, cleansing stations, schools for mentally and physically defective children.

V. *About thirty excursions* to places of interest in connection with hygiene and public health course.

### Public Health Subjects

Classes in public health nursing subjects will be given or arranged by a representative of the League of Red Cross Societies with the approval and cooperation of the Principal of Bedford College for Women.

I. *History of nursing*.

II. *Principles of public health nursing*.

III. *Development of health visiting and public health nursing* in various countries.

IV. *The responsibilities and duties of the public health nurse* in relation to: Schools, factories, homes, hospitals, out-patient clinics and dispensaries, general public health and sanitation.

V. *Development, organization and administration of*: (a) V sitting or district nursing, (b) child welfare nursing, (c) maternity and infant nursing, (d) rural and small town nursing, (e) clinics and health centers—traveling or permanent, (f) open-air schools.

VI. *Vital statistics*.—Use and value to public health nurse.

VII. *Records and reports*.—Value and method.

VIII. *Ways and methods of teaching*: (1) Home care of sick, (2) first aid, (3) school hygiene.

IX. *Supplementary lectures*. (1) Red Cross activities, (2) venereal disease, (3) tuberculosis nursing, (4) obstetrics, etc., nursing.

### Excursions Arranged

The students will be personally conducted to the following centers or activities:

I. *Social*: Charity Organization Society Office; Schools: Elementary, secondary, kindergarten; district nursing association; settlements.

II. *Child Welfare*: Crèche work, child welfare centers, maternity, hospitals, nursing schools, home nursing, school clinics and inspection.

III. *General*: Hospitals, training schools, nurses' hotels and clubs, college of nursing, and others to be selected later.



The scholarship includes tuition, laboratory fees, special fees to the college, board, residence, books, laundry, necessary transportation and incidental expense connected with the course.

Cleanliness is the only real disinfectant. No epidemic can resist thorough cleanliness and fresh air.—Florence Nightingale.

# The New "Round-Up" on the Old "Range"

## Improvement Marks the Matters that Occupy the Interest and Attention

BY WILSON ADAMS RUSSELL, M.D., COUNTY HEALTH OFFICER AND SCHOOL PHYSICIAN IN BIG HORN COUNTY, HARDIN, MONT.

FIFTY years ago in the southeastern part of Montana the American Indian chased the bison up and down the long valleys, across the level benches and among the foothills of the Rocky Mountains.

With the onward march of civilization, the bison became extinct, the Indians were rounded up and placed upon reservations and the vast prairies were covered with immense herds of cattle. In the spring of the year the cowboys went out with their lariats, lassoed the calves and branded them, that they might keep a careful record of the owner and breed.

A law was passed in the early days forbidding anyone to turn loose on the range, anything but pure bred and healthy sires, and, as a result, the white-faced Hereford stock of Montana is known all over the United States.

The onward march of civilization brought about still another change. The rivers were turned out of their usual channels and made to irrigate the semi-arid valleys and the modern method of dry land farming turned the bench lands into valuable wheat farms.

### Child Care Stimulated

This brought into the West many young people with the view of making homes for themselves, and now the great question before the people of our state is not so much the question of pure bred cattle, but whether we have healthy and robust children. People are coming to believe that it is more important to give the same intelligent, scientific care and attention to growing children that they have been compelled by law to give their cattle, but no law has yet been passed which insures healthy parentage to the children.

For the past four years, by the co-operation of the county commissioners and school boards of Big Horn County, there has been carried on a campaign for better health among the children and to stimulate the parents to greater interest in their physical condition.

After three years we are beginning to see the results, especially in the



The boy on the left of the picture is a graduate of the malnutrition class, having gained twenty pounds during a period of six months.

death rates. In Big Horn County, with a population of about seven thousand, in 1917 four babies died from preventable bowel trouble and one case from typhoid fever. In the three years—from January, 1918, to January, 1921—but one baby has died from preventable bowel trouble and there has been one death from typhoid fever.

One of the striking results is the improved condition of the rural school buildings. When this work began, there was scarcely a sanitary boys' toilet in the country, 62 per cent of the schools were without water and it was impossible to get 25 per cent of the parents to attend the meetings and discuss the condition of their children.

In the campaign just closed, there were only two toilets in the county which brought the severe condemnation of the sanitary officer, virtually every school is supplied with water where it is possible to get it, and 80 per cent of the parents were present to watch the examination of the children and discuss their condition. In one school, forty-five miles from a

railroad, every parent was present at the examination of the children.

Big Horn county has been organized for only eight years, but all the thirty-five schools visited last year were good frame buildings, with the exception of five, which were log buildings but well built and lighted.

Defective teeth have improved from 54 to 31 per cent, and throats needing operations from 15 to 6 per cent. Last year more than 40 per cent of those having defective eyesight were fitted with glasses and as a result of such correction two children were almost immediately advanced two grades.

The success of the health work in the schools and communities depends upon two factors of equal importance. First, the attitude of the teacher and his ability and energy in putting the lessons over. Second, the intelligence of the community and its distance from town and financial condition.

### Results Achieved

At Kirby, Mont., two teachers, Mr. Millard Underwood and Miss Rose Smith, have brought about a remarkable result. Six pupils, four girls and two boys, ranging from eleven to fourteen years of age, have developed an eight inch chest expansion in six months practice and one boy who was fifteen pounds underweight last September, has gained twenty pounds, largely by drinking milk.

In this particular school, physical culture has become one of the big things in the curriculum. The girls wear bloomers to school, chin the bar (in which feat they excel the boys), play leap-frog, and engage in all the games and sports the same as the boys. As a result, not a finer bunch of boys and girls physically can be found in the Northwest.

When the report came into my office with reference to these eight-inch chest expansions, the county superintendent, Miss Fay Alderson and the author, drove sixty miles to verify the statements.

The County Unit Board of Carbon County, our neighboring county on the west, asked me to carry on a similar campaign for them the past



Six children with chest expansion of eight inches, showing the effect of a well planned health regimen.

year, and I was glad to accept, as the topography and social and economic conditions of that county are different from our own. The lowest point is three thousand feet above sea level and the highest, 12,950 feet. One school is located at an altitude of six thousand feet, but as there was little snow last winter, we made the trip of more than two thousand miles in a car during December and January, examining 1,992 children.

Carbon county is very mountainous, being cut into numerous deep narrow canyons, in some of which are found immense coal mines, worked by people of many different nationalities.

In spite of the newness of the work, which handicapped the teachers somewhat, the results already accomplished prove that the seed was sown on fertile ground and will bring forth abundant harvest. One teacher has seen that every possible defect in her pupils has been corrected.

Mary Roberts Rinehart, speaking of Glacier Park, says, "Go, ride in the Rocky mountains and save your soul." A similar remark might be made in reference to the schools of our country. If you wish to know how extensive is our system of education and how far and upwards the long arm of our paternal government reaches, go, ride in the mountains of Montana, and you will appreciate as never before, the watchful care of our Government over the coming generation.

Although many schools are located in almost inaccessible places, and

miles from a railroad, still these children have a nine months school and a physical examination the same as those who live in the more thickly settled districts.

In Carbon County 43 per cent of the children had defective teeth as against 31 per cent in Big Horn County, where the work has been done for three years. A striking peculiarity in reference to the teeth was the fact that all the nationalities ranked about the same with the exception of the Finnish race, and in one school of 90 Finnish children, 70 per cent had bad teeth. The teeth of these children were broken off, presenting a saw-tooth appearance. One could almost tell a Finnish child by the condition of his teeth. They were also fleshy and over weight, and we were told that as babies they were given a great deal of sweet cake and coffee.

The number of mouth breathers was large, being 22 per cent. In one school of fourteen children, 9 were mouth breathers, and all slept with their windows closed.

Having been much interested the past two years in the subject of goiters, especially with reference to the effect upon them of the altitude and water supply, I made a careful survey this year in both counties.

In Carbon County, which is more mountainous and of higher altitude than Big Horn, 30 per cent of the children had goiters. In Big Horn County, which is lower and less mountainous, the goiters diminished to 17 per cent, while in the Hardin school district of four thousand square miles, occupying the lowest and most level portion of Big Horn County, the goiters diminished to 11 per cent. The conclusion reached is that those children living in the canyons close to the mountains, have more goiters than those living elsewhere.

### Poverty and Malnutrition

Of all the children examined this year, 8 per cent were suffering from malnutrition. Except in certain instances, these were all between the ages of 11 and 15. It must be remembered that people living in this new country are in many instances poor, and in trying to make homes for themselves, the boys and girls just coming into maturity, do a man's work and undergo great privation, which perhaps accounts for the cases of malnutrition found in the adolescent period.

Upon inquiry, we found that nineteen out of twenty of the malnutrition cases disliked milk, which leads me to

suggest that more attention be paid to the old cow as a big factor in the up-building of the race.

In this survey of two counties which cover an area larger than the state of New Jersey, we found in a mining town the very unusual condition of 25 per cent of the children in the first grade suffering from malnutrition. These children represented either Scotch-Irish, Slav, or Austrian people. When children of these same nationalities were examined in the third and fourth grades at the ages of ten and twelve years, they were up in weight but were from two to six inches under height.

In discussing this condition with the teachers and business men, the explanation was that the child up to the age of six or seven was dependent upon the mother for food and care and received no milk. In fact, during my stay in this community I only saw two milk cows and no milk wagons. These children also slept with the windows closed.

After the age of six or seven, the child rustled for himself and brought himself up in weight, but, like the stunted calf on the farm, was not able to overcome the handicap of a bad start in life and could not bring himself up in height. It is reported that these parents formerly gave their children from one to five years of age, beer and wine to drink, which may account somewhat for the conditions found.

In contrast to this, only a few miles from here we found an American girl sixteen years of age, living out in the



Girls playing leap frog at Kirby, Mont.

open with plenty of fresh air and milk, who was 6 feet 1½ inches tall and weighed 210 pounds.

While it has been impossible to get reports from all the teachers in the two counties, those received show that one child out of every six examined

between September, 1920, and February 8, 1921, has been to see either the dentist, a throat specialist, or has gained enough in weight to place him outside the malnutrition class.

While we have not progressed far enough yet in the care of children to

pass laws assuring them pure blooded and healthy sires, as we did for our cattle, still, by means of the yearly "round-up" we are correcting their physical defects and nearing the goal which we reached in the care of our cattle years ago.

## How the Public Health Nurse Gets There

COMMUNICATION is perhaps the most important factor that enters into present-day civilization; in fact, many students of social conditions hold that the chief points of contrast between modern and

comparatively fixed position of primitive peoples. Without free interchange, the habits of a people become firmly established and invention does not suggest new and better ways of doing things without the dynamic influence of multiple contacts. Whatever the principle is that energizes thought, it is set going through social stimuli. Robinson Crusoe is the only individual who ever accomplished much in isolation, and he carried his ideas and materials with him. In groups of minds that react to the same interests is developed what we designate as the public.

In the mountainous districts of Kentucky, where the people never get beyond the points of a single county, the public is small, the community spirit apathetic, and the interests of the people circumscribed. It is under such conditions that folk lore is conserved, archaic forms of speech remain current, and practices obtain that have been long outgrown elsewhere. The larger reading public who break down physical limitations and communicate with the whole outside world is more plastic, less fixed, and makes up the personnel of the advance guard of civilization.

The social progress of a community, then, is in a high degree related to its accessibility. Social workers, who

are the missionaries of social progress, must blaze new trails, and open new channels of communication so that isolated communities are isolated no longer, but become incorporated into the larger public.



The public health nurse walks through the city streets. Her cases are usually assigned with a view to keeping them within walking distance.

primitive peoples are to be explained in terms of the relative mobility and freedom of contact that obtain now as compared with the isolation and



A day in the "rickshaws" of Japan.

No small part of the difficulties of the work of the public health nurse consists in covering the ground between the health center and her widely separated charges. The good roads movement becomes a part of the better health movement because it facilitates communication. Complete medical service is a mobile thing and can be carried anywhere if the road is open.

The National Organization for Public Health Nursing has furnished us with pictures which bring out this phase of the public health nursing problem. Even in the city much time and energy are expended in getting about. Usually assignments are restricted so that the nurse may walk from place to place. Her faithful Ford carries her to more remote corners. Public health nurses are as essential in far away Lapland as they are in countries where neighborhoods



These public health nurses in Lapland have difficulties all their own but undertake them in a spirit of adventure.



This marks a particularly lonely spot covered by an American Red Cross nurse on snow shoes, making a trip to a country home in New York.

are not so isolated and where less travel is necessary and involves less hardship, and transportation difficulties do not hamper the public health nurse. Indeed, in a population where the simplified diet is drawn from stores in which fresh foods are lacking, public health problems may become very urgent. Deficiency in dietaries is reflected in the retarded growth of the children, the frequency of psychoses, and other special problems; but the chief problem of the public health nurse in such a community is how to get about and properly and regularly supervise her charges.

Wherever public health nursing is carried, one of the chief requirements in preliminary training is that the nurse in charge familiarize herself with the mental habits and general customs of the people. It is for this reason that sociologic courses are now being given to missionaries in foreign countries. Initial courses of this kind open up ways of immediate contact that simplify the work and enable the nurse to enter the local life and quickly gain the confidence of the people. This is particularly essential in districts where what is accomplished in the way of hygiene, modifications of dietary, etc., are difficult to carry out unless many concessions are made to previous habit and custom.

A recent report from one public health nurse in the South reports that to cover her district she travels twenty-five miles on Monday, five and a half miles on Tuesday, nine miles on Wednesday, and thirteen miles on Thursday. Transportation, she says, is very hard for her in her work. Sometimes the boats make the trip and sometimes they don't, and sometimes roads are impassable. Health prob-

lems among the negroes of the South are complex. Housing is poor. Child labor laws do not affect the children



The transportation of the nurse is accomplished under favorable conditions in hot Louisiana.

in the cotton fields, where they work side by side with adults. Public health problems present peculiar

phases in the agricultural portions of the cotton districts. Cotton growing, it is held, cannot be accomplished profitably unless the whole family works in the fields, and father, mother, and little children work side by side throughout the day; the home is neglected, meals are hastily and badly prepared, and perhaps not sufficiently varied. Fatigue, unfavorable living conditions, and poor diet constitute a formidable triad, and the public health nurse who shows these people how to make the best of such conditions is doing an important work. Health work takes on another aspect in the cotton manufacturing industry. In this case, to general unhygienic condition of dwellings is added the factor of overcrowding. The health hazards vary from community to community, but the health nurse goes everywhere to reduce the debilitating influences and to inculcate better practices.

Apparently the public health nurse of Japan has a more picturesque field and an easier means of locomotion. Louisiana has developed a highly mobile health service. Health trains, laboratories on wheels, traveling clinical units, find their parallel in the public health nurse who is transported by automobile.

The nurse in the Northwest is again dependent upon her own powers of endurance to get her across the stretches that lie between one client and another. It is one thing to develop a health center in a city and quite another to do effectual health extension work for isolated districts.



Transportation offers few difficulties to these nurses en route for service in Europe.

# THE NATION'S HEALTH

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## Research to Replace Rule-of-Thumb Epidemiology

THE realization for the first time that man has never completely eradicated any disease may come as a distinct shock to many hitherto optimistic health workers. To be sure, a given disease may have disappeared from a certain locale and sometimes it has appeared pretty certain that this came about as the result of definite sanitary measures, but always the disease exists somewhere else and is therefore liable to recur. We have the same epidemics now as in the Middle Ages, some of them, notably influenza, making quite as disastrous incursions as in that remote period. Plague is widely distributed; smallpox in modified form is present in practically the entire Carribean littoral; typhus prevails in many countries; tuberculosis continues to scourge mankind; the venereal infections flourish; cholera and typhoid exist in many nations; malaria is far from being conquered. In spite of the hope of many sanitary crusaders that at last man was putting "death beneath his feet," the communicable diseases continue.

The fact remains, however,—and it is here that encouragement should be derived—that it is only recently that man has acquired any really definite knowledge of epidemiology and that the world eradication of disease has just begun. It must be admitted in all honesty, that with regard to most diseases our knowledge of their modes of continuance and spread is exceedingly sketchy,

and, while we must continue to combat the infections with the weapons at our hand, we cannot make any permanent progress until research has added to our armamentarium. In other words, successful disease warfare requires instruments of precision and an accurately organized effort.

In the case of yellow fever, these prerequisites have been supplied. Carter's discovery of the extrinsic period of the infection, Reed's immortal confirmation of Finlay's theory, the amplification of its application by Gorgas and White, the creation of the Rockefeller Yellow Fever Institute, the epoch-making demonstration at Panama, the substitution of steam for sails, and Noguchi's studies have combined to draw the fangs of the jaundiced scourge of the Antilles. In less than a quarter of a century, the greatest enemy of tropical and sub-tropical life and commerce has been stamped out in its great endemic centers. It has been driven to its birthplace, Yucatan, where it is in a fair way to be forever conquered. This is possible because yellow fever warfare has been reduced to a single definite method, the destruction of the immature *Stegomyia*. Quarantine, isolation of the patient in the infectious stage, and the use of Noguchi's vaccines and sera are all secondary to the basic principle of the lowering of the *Stegomyia* index.

Plague eradication has been reduced to a certain fairly satisfactory formula, but a method of accurate, certain rodent destruction has still to be evolved. The wiping out of enzoötic foci, particularly where the disease is widespread among rural rodents, awaits research.

Tuberculosis control is in a far worse plight. Propagandists infest the land, spreading half-truth shibboleths and teaching doctrines which are unsupported by scientific evidence. Vast sums which could more profitably be expended in studying the disease are being utilized in carrying on a warfare against a pestilence of whose epidemiology we are still relatively ignorant.

Our situation in regard to influenza is even more humiliating. The recent epidemics of this disease spread unhampered exactly as in the Middle Ages, the only difference being an augmentation of speed induced by modern transportation facilities.

What do we really know about the epidemiology of such common diseases as mumps, measles, scarlet fever, and whooping cough? How is smallpox spread? How long are meningococcus carriers virulent? How much is there really to droplet infection, sputum interchange by mess-gear and overcrowding? What is our proved knowledge of the effects of atmospheric condition on disease spread? Just what is the rôle of over-



crowding, non-infected filth, and fatigue in the causation of the communicable infections!

These and a hundred similar questions which the honest sanitarian must ask himself daily indicate the need of intensive epidemiological research. The cry hitherto has been for sanitarians to do things, it being forgotten by the impatient taxpayer that empirical hygienic measures based on insufficient scientific proof, are usually the most expensive and the least efficient. The time has come for sanitarians to take stock, to discard rule-of-thumb methods and to place public health administration on a sound scientific basis.

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### A Note Concerning the World Diffusion of Plague

**S**ANITARY officers who are interested in the world spread of disease cannot but be made apprehensive by the present plague situation. Prior to the war, bubonic plague had established residual foci in China, India, the West Coast of Africa, and in the rural districts of central California. These acted as perpetuating reservoirs from which plague flowed out from time to time to gain a foothold in new territory, producing first acute epizootics and afterwards acute epidemics. If there was a concentrated rodent population and rats had free access to human habitations, the epidemic, in the absence of intelligent control operations, was large in proportion to the population. If, on the other hand, there was a sparseness of rodent or human population, or if human beings dwelt for the most part in a rat-free environment, only a few sporadic human cases occurred. If the city rat lived in fairly close proximity to the suburban and rural wild rodent, plague would be passed to the latter with a gradual lowering of virulence, the production of chronic plague, and the establishment of residual focus.

While the experiences of the Public Health Service in California demonstrated how well nigh impossible is the eradication of such a focus, they also showed the practicability of delimiting the infected area and of preventing the spread of the disease into urban centers.

Just prior to the war with Germany, plague was reported in Venezuela, Brazil, Chile, Ecuador, Peru, Cuba, Louisiana, and California, in the Western Hemisphere; in the Azores and Russia; in Turkey, Arabia, Persia, Ceylon, India, Siam, Indo-China, Dutch East Indies, the Straits Settlements, the Philippines, China and Japan; in Egypt, Morocco, Tripoli, Senegal, British East Africa, German East Africa, Zanzibar, and Mauritius; in Australia, Hawaii and New Caledonia.

In other words, on June 30, 1914, plague belted the world.

Then submarines and raiders began to infect the seas; in a moment the shipping of the world was diverted to the carriage of munitions; steamships moved in convoys; international maritime schedules were rearranged, and many hitherto busy ports were temporarily abandoned; the fleets of the globe were taken over by the Allies; production fell off enormously; world commerce underwent a complete metamorphosis. In spite of this tremendous change, the Armistice found plague distributed practically as it was at the beginning of the war five years before. In other words, while commerce had not spread the disease, civilization had been too busy in its fight for self-preservation to wage warfare against pestilence.

In the period of readjustment which succeeded, the nations found themselves impoverished and for the most part that condition still prevails. People who are struggling for the barest necessities of life cannot appreciate the necessity for plague eradication, therefore plague has had seven years in which to dig itself in and to establish chronic enzoötic foci.

Just now ship movement is still below the pre-war average rate. World commerce will keep pace with the return of prosperity and correspondingly the potentialities of plague diffusion will increase. If plague is actively combated now while shipping is slack, those potentialities will not be realized. Plague can be more cheaply fought now than later and future losses from disastrous quarantine may be avoided.

Some international agency should at once commence an organized campaign against plague. The world menace of the disease should be signaled to the nations and infected ports should be stimulated and assisted to the end that plague repressive measures be immediately instituted. What has been done in stamping out yellow fever indicates how successful such movement could be. The energetic prosecution of a world wide anti-plague campaign is today the crying sanitary need.

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### Attitude of the Public Toward Civilian Rehabilitation

**T**HE public feeling toward rehabilitation of physical handicapped civilians, on a broad scale, is one of good will. Opinion about the matter, however, being based on particular experiences, is not uniform. Those who are not concerned directly with the work have only the information or impressions they may have gathered about soldier rehabilitation work, the rela-

tionship of which to the civilian problem they can but surmise—with the use for comparison perhaps of one or two cases known to relief societies, or cases of beggars. Doctors, industrial managers, and teachers appreciate the many and varied conditions which would need to be changed before much could be accomplished for the physically handicapped as a group, one often not realizing how much the others are doing to improve conditions.

Those who are convinced of the value of rehabilitation work are the representatives of the Federal Board for Vocational Education, Red Cross workers and occupational therapists, who have been dealing with disabled soldiers, officials engaged in administering workmen's compensation laws, the personnel of public and private bureaus of rehabilitation, and many social workers and medical men who have seen its possibilities with the individual and also the shortcomings of the present discontinuous treatment of the civilian handicapped. What principles or practices they have in common, as a basis for their belief in rehabilitation, have not been discussed to any extent. It is from their experiences that policies of local communities and of the National government may be expected to be derived.

The introductory statement of the problem of rehabilitation made by Mr. William T. Cross in the March issue is continued with the present number. The problem is outlined as the author expressed it, "with no particular faith in administrative machinery as such, or in new names, but with a conviction that the greatest number of disabled persons will be reestablished in the next ten years if the nature of physical handicap and the processes of rehabilitation are more fully investigated; and that the problem may be soluble through coordinating the work of public and voluntary agencies."

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### Estimated Results of One Life Saving Campaign

**G**OOD health pays. This is the conclusion arrived at by a large business corporation to whom the saving of lives means a saving of dollars and cents and an increase in dividends. The results of a systematic campaign instituted in 1910 to lengthen the lives of its industrial policyholders, whose mortality had been higher than that of the general population, is evaluated in a recent publication of the Metropolitan Life Insurance Company entitled "Lengthening Life Through Insurance Health Work." By means of a thorough health educational campaign, an extensive visiting nurse service, an industrial service bureau, and practical cooperation with state

and local health officials, the improvement in industrial mortality in 1920 over 1911 has effected a saving of 38,000 lives, which in dollars and cents represents a saving of \$7,530,000 in death claims. Compared with the improvement in mortality rates in the country as a whole, the company shows an even greater saving of 17,800 lives, the equivalent of \$3,451,000 in death claims.

Analysis of the mortality records of the Metropolitan industrial policyholders and of the United States Registration Area reveals the fact that the decline from tuberculosis was three times greater in the former group. The downward tendency of the death rates of communicable diseases among children, typhoid fever, and diseases of the puerperal state was in every case greater among the industrial policyholders than in the Registration Area. An important observation is the distinct decline in the death rates of organic heart diseases and cancer among the industrial group, in contrast with a steady increase shown in these death rates in the general population.

The Framingham experiment, through its extensive efforts resulted in a decline in the tuberculosis death rate from 122 per 100,000 in the period 1907 to 1916, to 65 per 100,000 in 1920, a reduction of nearly one half.

The Metropolitan Life Insurance Company has amply demonstrated that "public health is purchasable," and that "a community can have as much health as it is willing to pay for."

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### The General Need of Placing a Quietus on Noise

**N**EEDLESS noise—how often all noise seems to be needless! says *The Modern Hospital* in commending the initiative of the personnel of a Cleveland hospital Society for the Prevention of Needless Noise, as a "blessed campaign" which should be carried well beyond the bounds of institutions for the care of the sick, whose populations may be regarded as sensitized to irritating noises until all noise seems needless.

"Many noises incidental to city life are easily preventable," say the June issue of *Better Health* in an editorial on "Noise and Health"; and a community that regards "health as its greatest asset" will undertake as a measure of preventive medicine the suppression of such noises as the clange of street car gongs, the screeching of whistles, the rattle of heavily laden trucks over badly paved streets, along with the deafening yell of street vendors and newsboys.

Nor is the beneficence of comparative silence a mere matter of sick relief. There is a distinct demand in several cities for the location of schools in the outskirts, where children may be trained

in surroundings where sounds supply something that approaches natural rhythms, it being evident that an environment which entails the bombardment of the senses by incessant din tends to disorganize the developing mind.

The contribution on the subject incidental to the report published in this issue of *THE NATION'S HEALTH*, made by Frank B. Gilbreth, chairman of the International Committee for the Elimination of Unnecessary Fatigue, before the convention of the Society of Industrial Engineers assigns to needless noises a highly important proportion of responsibility for unnecessary fatigue in industry. Two of the most significant contributions to this meeting, made by foreign members, had to do with the elimination of noise, and the suggestion was carried that the elimination of noise be made the subject for general attention on Fatigue Elimination Day, set by the Society of Industrial Engineers for the first Monday in December. Dr. Henry Head, of St. Mary's Hospital, London, in a recent communication defines physical exhaustion as the loss of capacity to dominate impulses derived from environmental stimuli.

Due regard for some of these disintegrating phases of our everyday life would free the energies for constructive effort. They are neglected at the peril of raw nerves, petulant dispositions, and general ineffectiveness.

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### A Note on the Epidemiology of Golf —A Chronic Incurable Disease

**G**OLF—O. D. Kolf, a club—is a chronic, incurable disease occurring in all climates, at all ages but most often among males in the fourth decade, and characterized by alternate periods of mental elevation and depression. The disease is ushered in by an acute myalgia of the muscles of the trunk extremities and delusions of wealth as evidenced by the miscellaneous purchase of bags, clubs, and balls. In the initial stages there is a marked change in the vocabulary and apparently meaningless words such as tee, lie, whiff, and dub are used. In the chronic stage there is a settled and prevailing profanity. Physically the disease is characterized by the loss of the equatorial mid-riff, general hardening of the musculature, tanning of the face and forearms, and general increase in the coordination of brain, eye, and muscle. A marked irritability alternated by periods of beatitude is to be noted in cases of long standing. The disease is most violent on Sundays and holidays. Although associated with insect life, golf is spread by intimate contact with persons in the chronic stage. A sub-variant, known as chin golf, is recognized.

Golf appears to have had its birthplace in

Holland and numerous paintings depicting its victims putting at a stake set in the ice are still extant. It is believed that these represent merely the hibernating form of the malady. The stake is still used in different form.

Introduced in Scotland by sailing vessels, it spread rapidly in spite of many legislative acts and formed there an endemic focus, which has never been eradicated. Thence it spread into England, forming several virulent sub-foci, one of the most active still remaining at Blackheath, also famous for its highwaymen. The connection between the two has never been established.

Modern transportation has facilitated the distribution of golf round the world, at first gaining entrance to the larger centers whence it has travelled out to the more sparsely settled districts. Thus from an urban disease it has gradually become metamorphosed into an affliction of town and country alike. This spread cannot but be viewed by other than alarm by health workers. A disease which may attack both sexes and all ages, which reduces the morbidity and mortality rates, which promotes longevity and delays senility, strikes at the taproots of the health-workers' livelihood.

Worst of all, all repressive measures seem futile. The clergy has preached against it as an enemy of church attendance; business men have realized that they must either give up golf or business and have sacrificed the latter; poets have raved over the fact that nothing will rhyme with it; yet it has crept forward, insidiously attacking all with whom it come into contact. One armed men have succumbed to it; advertisements for artificial limbs now show a central figure just about to smite or dub his drive; and as for the collar and shaving soap ads, what would they be without golf? Women no longer exercise with a crochet needle and a box of chocolates; instead they wield a mashie and abuse the careless caddy. Yes, golf has come to stay and relief can be gained only by submitting to the inevitable infection.

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### Washington Conference Clears Pellagra Situation

**T**HE conference of southern state health officers, held early in August at the call of the Surgeon General of the United States Public Health Service to discuss the pellagra situation in the South, reassured the Nation that there was no occasion for undue concern. A letter from the President to the Surgeon General, calling attention to famine and pellagra sweeping the southern states, was prominently reported in newspapers throughout the country, to the great dismay of representative southerners, who denied the accu-

racy of the report. The southern health officers attending the Conference also felt that an irreparable damage had been done the South and desired a public retraction of the statement.

The classic researches of Goldberger have demonstrated that pellagra is not communicable but a disease resulting from deficient diet—lack of lean meats, milk, eggs, and legumes. Obviously, the family diet is directly influenced by economic conditions so that periods of financial depression are generally accompanied by an increase in pellagra incidence. Sydenstricker, in *Public Health Reports*, under date of October 22, 1915, and the experimental work of Wait, reported in Bulletin No. 221, have accounted for the higher incidence of pellagra in rural than in urban sections of the country on the basis of the greater shortage in the country of the essential proteins than obtains among the poor of the cities.

Pellagra was first recognized as endemic in this country in 1908-1909, and attained its maximum incidence in 1915 following the depression brought on by the outbreak of the European War. During the five year period 1914-1918 there was an average annual mortality of eight thousand deaths from pellagra, and probably one hundred sixty thousand cases. In 1919 and 1920 there was a sharp decline brought on by the prosperity of the years 1918-1920. Indications afforded by the trend of pellagra incidence in certain representative localities clearly point to an increase of about 25 per cent in the pellagra incidence in 1921 as compared with last year, or an estimate of five thousand deaths and one hundred thousand cases for 1921. Despite this increase, the figures are distinctly lower than those during the period 1914-1918.

The following extracts from the resolutions adopted by the Conference indicate the conclusions arrived at by the health officers:

After making an investigation using all information available, we do not believe the situation warrants or should occasion any undue alarm. The indications are that there will be an increase in pellagra this year in localities in certain states where the disease has been endemic, but data in hand show in an unmistakable way that the number of cases and deaths from pellagra during 1921 will still be less than the annual average during the period 1914-1918.

There is no condition approaching a famine or plague in the South. It is obvious that this is a clear case of misinterpretation of terms, an incorrect analysis, and as a result statements have been made that are erroneous and misleading to the public.

There is much obscurity in the recrudescence of disease and a situation of this kind calls for careful consideration, but there are confronting the Nation health problems of much more serious moment than pellagra and it is hoped that popular interest will be similarly forthcoming in the efforts to eradicate these diseases, and to promote the national vitality in general.

TWO decisions of far reaching importance as affecting the future relationships of the British medical profession were reached in the early business sessions of the British Medical Association recently convened at Newcastle-on-Tyne, the one growing out of the recent violation of professional secrecy in a civil court, and the other out of the opening made last year for the affiliation of the Association with non-medical bodies.

It was practically a unanimous opinion that the Association should use all its power to support a member who resists giving evidence on duress, and that it can hardly be to the detriment of justice if "for the present the value of the Wassermann test and the differential features of the Spirochete group are ruled out of court." Another year must pass before this decision becomes the considered policy of the Association. Meanwhile, means are to be sought to reconcile medical and legal views to the benefit of the community.

Affiliation with non-medical health agencies was held by the Association to be undesirable. It was the decision of the meeting that the value of identity and individuality is so great an asset as not to be weakened in speaking to the Ministry of Health with the united voice of all health interests. This is not to be taken, however, as a decision to rule out conferences before presentation in order to thresh out mutual difficulties.

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VARIATIONS among state and Federal laws often embarrass manufacturers and distributors of foods, drugs and medicines, but the many difficulties in the way of any effort to frame Federal food and drug legislation so that it will invariably and effectively meet the local needs of each and every part of the United States are emphasized in connections with Bill S. 1887 recently introduced into the United States Senate.

The Bill provides that no law of any state, city, or municipality, relating to the adulteration and labeling of foods, drugs, or medicines shall apply to or interfere with the sale of any such article after it has been transported to interstate commerce.

Interesting complications suggest themselves as arising from making such "package" goods subject only to Federal jurisdiction. Milk, poisons, narcotics, habit forming drugs, fraudulent advertising, goods spoiled in the original container, would all be in a hopeless tangle unless such a bill effectively occupied the local field with courts, inspection forces, and other means of administration.

# HEALTH IN INDUSTRY

*Official Organ of the American Association of  
Industrial Physicians and Surgeons*

*Editors for the Association*

THOMAS CROWDER, M.D.

CHARLES LAUFFER, M.D.

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## Medicine As Related to Workers and Production

*Exploitation Gives Way Before a New  
Sense of Opportunity and Responsibility.*

BY CHARLES A. ANDREWS, PRESIDENT OF THE ASSOCIATED INDUSTRIES OF MASSACHUSETTS, BOSTON, MASS.

THE subject of this symposium is very comprehensive, so much so that the time allowance of twenty minutes for the presentation of each of its several phases necessarily limits the discussion to the more outstanding problems. But the mere fact of holding an open forum of this kind shows that progress has been made in the field of industrial medicine. Ten years ago it would have been impossible. The topic itself is a comparatively new development. Ten or fifteen years ago nobody cared very much about the health of the workers; and it is almost true to say that no industries or industrial managers had concluded that they had any responsibility in the matter or that there was any service that they could perform with relation to the health and physical condition of their employees. But during the last few years various experiments have been undertaken and some achievements made. As this new sense of responsibility for health has been growing, it has gone through the same transformation that most new ideas have to go through in the process of getting established. A lot of false starts have been made and mistakes have crept in. What at first looked like a promising lead to accomplish something has, on further experience, turned out to be a false ideal. But, with all the mistakes that must be admitted, progress has been made until today the employer of any considerable number of workers finds—

*We are presenting in this series of papers a symposium of addresses made before a joint meeting of the Associated Industries of Massachusetts, the Boston Employment Managers Association, and the American Association of Industrial Physicians and Surgeons held at the Copley Plaza Hotel, Boston, Mass., Tuesday, June 6, 1921.*

*The meeting was so arranged that representative men gave expression to the typical viewpoints which are shaping the course of industrial medicine today. Whatever the contribution made by industrial medicine, it will be arrived at through a working compromise effectually representing all interests.*

not as a matter of paternalism—not as a matter of charity in order that he may give something with no hope or expectation of return—but as a matter of sound business methods and as a matter of discharging an obligation toward those who are associated with him that there is something to be done in part by the management or under the guidance of the management, with relation to the health and physical condition of his employees. The conception is beginning to get established and is founded on three or four reasons:

One is for the dollars and cents, as affecting the employer; another, for the dollars and cents, as affecting the employee; and another, for the spirit of contentment and optimism and good Americanism, as affecting them all. During the last few years development has been on the basis of this ideal. We have already overcome some of our early mistakes and begin to see ways of eliminating more of them. The subject is comparatively new, but its application to the economic life of the community is increasingly broader.

### On the Basis of Reason

There was opposition when the American Association of Industrial Physicians and Surgeons decided to hold its annual meeting and join with representatives of industry for the consideration of some of the problems which these new ideals in industry presented. The removal of this opposition illustrates a fact which is becoming more and more evident as the days go by—that the old conceptions of hiring laborers, working them as hard as possible, getting the maximum production from them, selling the goods, and having no concern for any of the human relationships or any of the vital interests of the employees or of the management, were all wrong. Those days have gone by, and a finer sense of opportunity and responsibility has come into industry to which industry is responding. The response is not complete yet, but a

fine start is being made toward a greater vigor and a better conception of its opportunities, its duties, and its responsibilities.

In the various societies in the communities where we are established, in which we and our employees work and live together, not only during the factory hours, but also during the entire week, it means much to evolve this sense of mutual opportunity and responsibility. As industry has visualized that picture of mutual interest and mutual service, the medical profession has aroused itself from its old self-satisfied orthodoxy, and has produced a virile group, traveling new paths, honoring themselves and their profession, and making their profes-

sion of greater value for the whole community than it has been before. So that, as we consider some of the problems and recite some of the past experiences we are justified in regarding the changes so far accomplished as being on the whole constructive, remembering meanwhile that the ideals of industrial medicine are not yet achieved and that, however great the progress made in the last few years, the distance yet to be traveled is vastly greater than that which has as yet been covered.

#### Evidence of Progress

A conference such as this could not have been called ten years ago. Not a single industrialist would have

taken part in it. Few, if any, physicians could have been induced to come. There would have been almost no stories to tell, no experiences to recite, and very few ideas to express. If, perchance, some one had drifted into an assembly of this character and expressed an idea with relation to the matter of medicine in industry, he would have recited to a cynical audience. We have passed well beyond those days; so that this body, representing industry, industrial management, and industrial medicine, is a group of idealists who have accomplished practical things, and who, to an appreciable extent, have already shown that they can make dreams come true.

## Production Manager's Interest in Industrial Health

### The Efficiency of the Men is a Fair Index of the Value of Health Engineering.

BY JOHN SPENCE, WORKS MANAGER, NORTON GRINDING COMPANY, WORCESTER, MASS.

WE ARE probably approaching a period of years of such keen competition in business that many undertakings adopted without careful consideration in the boom times of the past six years will now be submitted to careful scrutiny. The time for doing a thing because others were doing it or because it seemed to offer a remedy, though an expensive one, for some industrial problem has evidently gone by. Many who, because of several successive years of good business, had arrived at a state of mind where a return to normal or sub-normal times seemed to them an impossibility are now wishing they had allowed time to solve their questions and that the money spent on quick but unfortunately short-lived solutions was now in the treasury available for much more important issues.

#### Discrimination Necessary

In the general retrenchment that is now going on and must continue to an even greater extent, every cause of business expense will be carefully considered. In some cases the reaction will be as extreme towards the lopping off of expense as it recently was towards the acquiring of it. Among other more or less recent industrial institutions to come in for its share of scrutiny as to the real value to the corporation will be the shop doctor and the shop hospital.

I do not know why so unimportant a layman as myself was invited to discuss the subject of the shop doctor. Possibly it was because someone heard me express what were called, before the slump, old fashioned ideas on collective bargaining or industrial democracy among the vagaries of a recently deceased period and naturally concluded that I might furnish some fireworks in a conference of this kind, but if so, I must disappoint him because he happened to pick on a man who is very much in favor of the shop doctor.

#### A Change of Heart

I have not always been in this frame of mind towards medicine in industry and I have no doubt that many members of the American Association of Industrial Physicians and Surgeons have had to convert some of their shop men just as our Dr. W. Irving Clark has converted me.

My experience was gained in shops where a daub of hot glue was a cure-all for cuts and lacerations. There were those among the old fellows who stated that a cobweb laid across a cut was the quickest and surest cure. I never had a chance to try it because even in my benighted period shops had arrived at a state of sanitation in which cobwebs were no longer allowed to accumulate. We looked down on the cobweb advocates as being remnants of an ignorant past

and stuck to our glue. Possibly, being of those who dealt in material things, we found it easier to stick to glue than to cobwebs.

Another thing impressed upon us was that one did not quit work on account of what we were prone to regard as somewhat trivial accidents of a kind that today would lead the doctor to send a man home or to extend expert special attention.

When, therefore, a shop doctor began to be advocated I was among the doubters. My company is fortunate in having in their medical director a man who not only can but is willing to argue and demonstrate a point without arousing rancor or personal feelings. At first I was doubtful of the value of complete physical examination. Today, because time has proved its very small per capita cost and the quite large possibilities of its usefulness, I favor it.

At first I thought we were on the road to make mollicoddles of the men when it was desired to treat at the hospital every abrasion, no matter how slight. I thought the foreman and time clerks could continue to take care of minor cases and could send on to the doctor those worthy of his attention; but the fact that there is no definite borderline between cases that can be handled this way and those that should have expert attention, and the sight of one or two bad cases of blood poison, showed



me the relative unimportance of an apparent slight saving of costs. So far as making mollycoddles of the men is concerned, that illusion was eliminated by the boys who went over to France. I have from the first been in favor of what I would call the regular work of the doctor, that is, the caring for cases of illness. Here is where the shop doctor not only does a humanitarian act, but can go far toward healing any ill feelings in industry.

### The Placing of Blame

The man who is bruised or cut may with some justice look on others as being responsible, but he can hardly blame anyone but himself for most of his physical ills. Because of the opportunity for engendering goodwill through such cases, too much care cannot be exercised in selecting a shop doctor. He must be fully aware that while his job is primarily to relieve distress and to reestablish the worker to full earning power, an equally important part is the team work he owes to the production officials in attempting to build up the proper shop spirit.

A successful shop doctor, in addition to being a good medical man in whom the men have confidence, must have ability as a leader and organizer. With this ability he will be enabled to enlist the cooperation of foremen in the furthering of plans that would fall flat without the foreman's sympathy. Illustrations of such cases are: the bettering of working conditions, the re-examination of men who are failing physically, and the investigation of absenteeism.

While I do not believe that paternalism in general is good, yet a little paternal-like advice is usually acceptable. In this line the shop doctor can help the production men by doing his best to maintain the health of at least the more important men by occasional re-examination and advice with regard to right ways of living. In spite of the recent constitutional amendment, most people do not as yet drink enough water. The shop doctor, who can advise or scare a corps of important men into acquiring the water habit will have paid his way.

The departments having to do with sanitation, safety, and health are so closely related that whenever the right medical director can be found all of these should come under his authority, in addition to which functions he should be a man to work towards the bettering of living conditions and welfare work in general. This is especially important because of the fact that the ignorance that

leads to the necessity of such work, usually involves the need of medical training.

From the standpoint of a production man the shop doctor is necessary not only because of the good he can do in building up shop morale, but because our own figures prove that our hospital service pays its own way in productive hours saved plus the cost of turnover that would result from misplaced physical defectives.

For the past twenty-seven years I have been in contact with men in the shop. I have seen men comparatively young in years gradually go down physically and mentally because they had no one to give them a bit of advice as to the care of teeth, proper food, and proper sleeping conditions.

The effect on production and the profits of the corporation employing such men can, of course, be only surmised, but it must be quite a significant item, especially in cases of men who are paid for extreme skill or knowledge rather than for physical effort. From a cold business standpoint the unskilled can be replaced by young and vigorous laborers, but it is not possible without great loss to replace an accumulated knowledge of special lines of the business, acquired by years of experience. This loss is going on in shops everywhere every day and I am certain from a few experiments we have carried out that a great proportion of these cases of men "running down hill" can be cured if a shop is efficient in having the right kind of a doctor.

A shop doctor, because of the fact that his patients are members of his own industrial family, must acquire the more or less paternal attitude. His job ceases to become simply a means of earning a living and takes on more or less the attitude of co-operation with the management of

the business for increased production on the one hand and on the other a sympathetic interest in the worker for the sake of building up happier, healthier people.

The physician in private practice, because of the fact that his services must be paid for by the piece—to use a shop term—cannot follow up his cases as he would wish to if it were within his power to do the best thing for each patient. In the shop, however, there is no such restriction and the shop doctor may, therefore, gradually take the same interest in building an improved production of his department as an index of effective service that the engineer now takes towards the output of the plant.

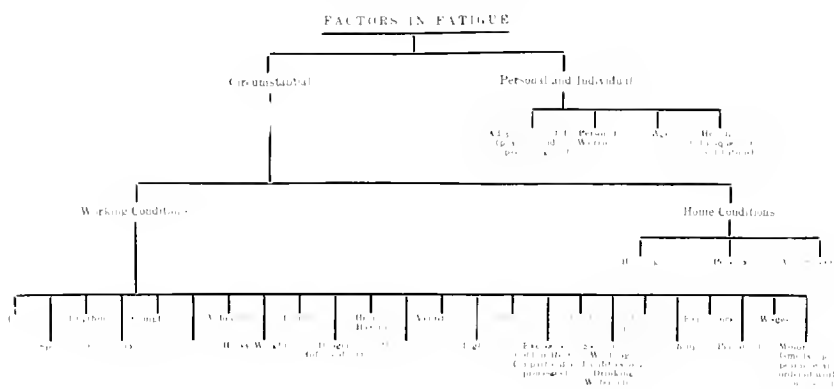
This attitude may be regarded as somewhat visionary and the outlook of the up-lifter. I am quite convinced, however, that even from the standpoint of a money valuation there is just as much if not more profit in this kind of work as in the careful maintenance of the plant itself.

There are few men today who would consent to the dropping of shop cleaning or sanitation work, yet our figures show that the entire cost of our hospital work amounts to only three-tenths per capita of what we pay for shop cleaning. Both are necessary and both in the long run pay dividends.

### Airplane Medical Service

The French government has built six airplanes for use in the colonies where the distances the doctors have to travel are enormous and where there are no medical facilities. The planes carry complete medical and surgical kits, and are so constructed that patients seriously ill or injured may be carried from remote regions to hospitals.

### Woman's Bureau Studies Fatigue



The above graph originated in the Woman's Bureau, New York State Industrial Commission. It is designed to show the lines of investigation involved in fatigue studies and their several relations to the problem as a whole.

# The Consultant in Industrial Medical Service

Industrial Health is Public Health and Both  
Are the Proper Objects of Collective Effort.

By WADE WRIGHT, M.D., INDUSTRIAL CLINIC, MASSACHUSETTS GENERAL HOSPITAL, BOSTON, MASS.; SECRETARY OF THE DIVISION OF INDUSTRIAL HYGIENE, HARVARD MEDICAL SCHOOL

IT IS but fair to state at the outset that this contribution does not come from an industrial physician, one directing the health activities of an industrial organization, but from a doctor quite on the outside, looking upon the activities of many industrial medical establishments and as one whose daily duty it is to consider the ailments and disabilities of industrial workers as they are found in a large general hospital.

Most people need a job and for one reason or another, most want a job. Having found it, if it be truly a job, the worker's life revolves about it. The nature of the work, the hours of labor, the compensation received; these determine in large measure the manner of life of the worker, his lodging, his food, his clothing, his opportunities for recreation and for intellectual development; and as for him, so for his family and those dependent upon him.

If work be so dominant an influence in regard to his economic and spiritual welfare, it is surely true that it is as definitely related to his physical well being. I do not mean to imply that a worker, for example, of subnormal mind and body, ignorant and improvident, is such because of the work he does, but rather that upon this worker, whatever his physical and mental endowment may be, industrial life exerts influences for good or ill.

The people of our country are in large part an industrial people. They live by industry and industry by them. Whatever we may some day come to consider the rights of the community and of the state to control all essential industries as public utilities, it is true today that with varying standards of honesty and justice our industries serve as public utilities, either public luxuries or public necessities.

It is in this close interrelation, this identity of the community's good and the good of industry that I believe industrial medicine is rooted. The health of labor in a shoe factory is the health of the people of a shoe factory town. The public health of an industrial community is with reasonable exactness the health of the industrial workers of that community.

*Industrial health is so nearly identical with public health that it would seem as if industrial hygiene were properly a unit of the community health service.*

*The fact remains, however, that in few communities has medical organization developed efficient means of recognizing and promptly treating incipient disease. If such service is desired in industry, industry must provide it.*

*The character of a community is governed largely by industrial conditions and through such means as the physical examination of labor and the periodic re-examination of employees are afforded unlimited opportunities for constructive health work.*

A sick town means sick workers and sick workers mean a sick factory. The factory cannot be cured, except by curing the sick workers.

Few people are wholly well, many are far from well, probably most are definitely handicapped by physical and mental disabilities. We still lack satisfactory statistics regarding morbidity and particularly industrial morbidity and sick absenteeism, but there is reason to believe that the conventional figure of nine days' sickness per worker per year is low rather than high. The cost of this is not totalled when to the lost wages of workers is added the immediate cost to industry. Sickness, and its care, unemployment and its attendant hardships, destitution and pauperism must all be reckoned in.

We all pay for this, but industry, absolutely dependent for best production upon the best health of producers pays far more than need be, if it fails to support every reasonable effort, in industrial establishments and without which tends to promote the health of its directing and operating forces. For the individual plant offering such support there is additional advantage to be gained over competing organizations which consider the promotion of

health wholly a concern of the individual and of the community medical and public health personnel.

## No Right to Be Sick

We deny the right of an individual to take his own life, but it would be considered generally an infringement of that popular phase of freedom called "personal liberty" to deny an individual the privilege of being sick when and as he pleases, to deny his right to impose his own physical worthlessness upon his fellows.

Medical organization has in few if any communities been perfected to such a state that it makes readily available the service necessary for the prompt recognition of incipient disease and for the treatment of various disabilities and the remedying of defects. If industry finds such a service desirable, it must provide it.

It should seldom be necessary to maintain the facilities for such service wholly within industrial medical organizations. A plant medical service is usually strengthened by close working relations with community resources. The relations of the company physician and the local practitioners may be adjusted in conformity with the Golden Rule, which, happily, has not as yet been found unconstitutional.

In certain mechanical industries the incidence of accidents is such as to demand much surgery, but it is obvious that the health of a working force cannot be safeguarded and maintained by surgical dressings alone. It is through such means as the physical examination of labor applicants, through periodic re-examinations of employees, through the development of good will and confidence of workers in the medical department and the consequent appeal for the advice of the plant physician that the opportunities for constructive work are to be found.

It is thus that defects, perhaps of long standing, may be found and remedies suggested and made possible; that potential sources of disability may be discovered and prophylactic measures instituted, that early disease may be detected and treatment offered.

Service of this character can only be rendered by able personnel and it is economic folly for the administration of an industrial organization to believe that practically any doctor or any nurse can be depended upon to do work of a satisfactorily high standard. The interests of successful industrial physicians and nurses cannot be their own interests or the company's interests, but rather a just mingling of the company's interests with those of the patients who come to them for professional service. It scarcely need be stated that competent physicians cannot be secured unless their compensation be roughly commensurate with their worth.

### Costs More. Worth It

Good industrial medical service is not to be had cheaply, yet it seems that it is worth what it costs and more, for ill health is so costly. It seems worth while. Establishments installing medical service do not abandon it. They may reduce it in times of depression, but the tendency is almost invariably toward development, toward an increase in the range of health department activities.

Industrial physicians rise from time to time to proclaim vehemently that industrial medical service pays and

they are followed by plant executives who admit and may even enthusiastically endorse this fact. It probably does pay, in dollars, but health and ill health are elusive things with which to reckon. One may perhaps estimate the cost of known ill health with fair accuracy, but it is not so simple to state with precision the influence exerted by a plant medical department upon such matters as absenteeism and labor turnover, neatly dissociating the part played by the medical department from the effects of other personnel activities.

If an industrial medical service is so good a service that the physical standards for employees are advanced, if workers keep well or when sick get well more promptly than they did before the medical department was established, and if there is no waste in the administration of the department, it probably pays in dollars.

Industrial physicians, about the time they make announcement of their departmental dividends, are liable to state with ponderous seriousness that the "object of industry is to make goods and sell 'em at a profit." If one is present, a personnel man may rise to give utterance to the same sentiment. If the speaking continues the thought will probably be

again expressed, with the possible addition that without this goal of industry, the making of goods and the selling of them at a profit, all else fails, even jobs for industrial physicians and personnel directors. It would seem to be true, for many earnest men state it earnestly.

In this company I would be so ungracious as to say that the interests and ideals of many industrial executives are such as to shake my belief in the soundness of this statement of the first object of industry, the creed so solemnly pronounced. A similar creed for all men might be—"I believe the object of life is to eat from time to time—without this, all else fails!" "To make goods and sell 'em at a profit" cannot be the object of industry, if industry is truly an expression of a people, an expression of idealism in action. It may be that with the wholesome sentiment which is rather likely to abound beneath the case hardened exterior of the hard headed business man, it may sometime be admitted more often than now that industry is no little concerned with the making of goods at a profit, but also with the making of men.

The progressive industrial physician wishes to have a hand in both of these tasks.

## The Medical Department Proves Its Value

### Cooperation On the Part of the Men Is the First Requisite of Success.

By J. A. ROBERTSON, MANAGER OF THE CAMERA WORKS, EASTMAN KODAK COMPANY, ROCHESTER, N. Y.

THE subject under consideration is "Health in Industry." This is a big problem, and as an illustration of how medical service may develop, I will relate to you briefly how the Eastman Kodak Company started on this line of work. In 1908 I took charge of the Camera Works. I had worked for Mr. Eastman twenty years before that, but had left him and gone into business for myself. Later, I sold out to the Eastman Company and went back to work for him. While in business for myself, I learned some things which I have not forgotten, because, when you have to worry as to where the next Saturday night's payroll is coming from and how you are going to sell enough goods to meet the payrolls and the other obligations, you learn something that you do not learn in college or from books. I never went to college,

having gone to work at fourteen years of age, and became a foreman, superintendent, and, later, a manager. So I think I know a little of the psychology of the worker, and I believe yet, despite scientific management and a lot of other things, that in order to get results, you have to get the good will of the employee and enlist his sympathy and his respect for fair dealing. You must get him to want to put it across; then he will do it. The methods that may be used to get him into that attitude differ. It is not essential which is used, so that you get it across; but the medical department in our large industries has become important in this respect, and how much further it will go, no one can tell.

Shortly after I went to work for the Eastman Kodak Company, they were carrying liability insurance, and left

it to the tender mercy of the insurance adjuster to take care of the injured. Soon after I went there, an old employee met with a serious accident, which resulted in the amputation of one of his hands. I did not feel that it was right to leave his case with the insurance adjuster, and took it up with Mr. Eastman, who said: "Pay the man his wages while he is off. He is an old employee." I said, "How about the next case? You will establish a precedent. I think we are big enough to cut out insurance, carry our own risks, and take care of the employees. While in business for myself, I did not carry liability insurance, but when a worker was hurt, I got the best doctor I could to take care of him, paying the man half his wages. I had no suits for damages and the attitude it is possible to create with men by humane

ALLOWANCES FOR ABSENCE CAUSED BY ILLNESS

Period of service	Proportion of wages payable	Maximum period covered by these payments during second 6 mos. of service or any year thereafter	Maximum weekly payment
Less than six months	$\frac{1}{3}$	6 weeks	\$10.00
6 months, but less than 1 year	$\frac{1}{2}$	13 weeks	15.00
1 year, but less than 3 years	$\frac{2}{3}$	26 weeks	20.00
3 years, but less than 5 years	$\frac{3}{4}$	26 weeks	22.50
5 years or over	$\frac{3}{4}$	26 weeks	22.50

No allowance in any case for first week's absence.

and just measures, treating them as you feel they should be treated, brings the biggest dividends."

After that conversation, it was decided to appoint a Safety Committee consisting of the managers of our six Rochester plants, and I had the honor of being made chairman. We instituted an intensive accident prevention campaign. The first thing was thoroughly to safeguard the workingman. To convince the employees of the seriousness of your intentions you must do your part before asking them to do theirs. We used lantern slides, motion pictures, and illustrated bulletins to get the education over to the workers, and the decreased number of accidents proved the value of the instruction.

Health Pays Dividends

Carrying our own insurance was a demonstration that it was not only philanthropic but economic, and it pays big dividends to the Eastman Kodak Company.

We employed for a while a part-time doctor to take care of the accident cases, but the requirements grew until we found that we had to have our own physician. The department gradually increased and a year or two afterwards we put in physical examination, additional doctors, nurses, and attendants.

The problem is not yet solved because each day new questions are coming up. We find tuberculous cases. Our doctor told me recently that there were two hundred fifty cases of incipient tuberculosis and no institution could be found to which they would be admitted. It is an awful thing to leave a man sitting on a mine of that sort, when he could be cured by proper attention. We have operated on over one hundred cases of hernia with only two failures, which is a pretty good record. Some doctors do not average as well.

May 1, 1920, we put into effect health benefits, paying the employees in proportion to their length of service, a certain portion of their wages while they are off sick, as shown in the above table.

It is always important to remember that you cannot by any system of bookkeeping figure the results in dollars and cents as a paying proposition, but when you turn to the increase of wages since 1914 and figure the increased production that we have in our factory, it is not difficult to prove that it does pay. Since 1914 earnings have increased more than 120 per cent, and so far as it is possible to determine by comparison our labor cost has only increased 27 per cent during the same period. What part of this increase in earnings the medical department is responsible for, no one can tell, but we are convinced that a good ratio of that increased

production is probably due to the care of the physical condition of the workmen. It is not a question alone of producing goods by working the men hard and making money. The employer to be successful must look out for the health and working conditions of the people under him and educate them in welfare and thrift; and unless he is big enough to put these things over and get the cooperation of the employees, he will be a failure in the manufacturing business.

While we are passing through this great business crisis, there may be a little falling off in interest among those who have not proved the benefit and the merit of health in industry, but with those who have and are interested in the development of real, red blooded citizens, the matter is different. The boys who came back from over there are helping us because the war opened up new avenues to them and they saw the possibilities. They believe as do we all, that every man should have equality of opportunity to grow up and labor for himself and be paid what he earns, and not on a scale set by someone else.

The Physician's Viewpoint

By OTTO P. GEIER, M.D. CINCINNATI MILLING MACHINE COMPANY, CINCINNATI, OHIO

THE introductory remarks of Charles A. Andrews, chairman of the Joint Meeting, giving a splendid outline of the whole philosophy of industrial relations, followed by the tribute of Mr. John Spence to the value of medical service in industry; Dr. Wright's thorough exposition of the social and economic side of industrial medicine; and Mr. Robertson's generous and humorous testimony, leave little for me to say in regard to the industrial physician's viewpoint. I wish, however, in my official capacity to express the deepest appreciation of the value of this representative conference as a testimony to the importance of the program initiated by the American Association of Industrial Physicians and Surgeons. In the six years that this organization has been in existence there have been times when the physicians have lost faith in industry, when their courage and enthusiasm weakened. Personally, however, I have always had the faith that somewhere, somehow, sometime, industry might get the proper appreciation of its responsibility towards the worker and, particularly, might exhibit a consistent interest in

the worker's health, and that this interest in the worker's health might be on a perfectly selfish basis, as a mere matter of production, not only as a gain in output per man, but would secure something far more valuable than that, an improved state of mind in the employee and the employer, a better relationship between labor and capital.

Not an Artificial Contact

This can come in no finer way than through the series of contacts and elbow-brushings that come about in the industrial clinic, where the doctor acts as a real friend to the worker. The true industrial clinic is not an artificial contact point but is an institution with a personality that has within it the power to know what service is needed and to render such service, that expresses its desire to help in natural channels. It is here where the physician can put his scientific attainments at the disposal of the worker, who in the main has always been denied the opportunity of having intelligent medical service for himself.

This type of social service and every day helpfulness, built upon the

century old relationship of the physician to the patient—that of priest, confessor, and advisor—is valuable when set up in industry, particularly if it is not set up on a dividend paying basis but undertaken because it is just and right. When industry sets up this type of service to its men as an integral portion of its organization, then we may actually believe that the first round in the better relationship between labor and capital has been climbed.

The size of this job and the need of this service are probably best indicated when we recall that 35 to 40 per cent of the young men of our country by physical examination proved themselves unfit to tote a gun in the service of their country. This is an industrial country. Most of us, in the cities at least, are working directly or indirectly for industry. When we stop to realize that our present mode of living and doing and earning has finally produced a type of manhood 35 per cent of whom are deficient for war purposes we naturally ask ourselves whether this condition does not also measure the mental and physical deficiency of society as a whole in peace time. Then we naturally ask ourselves a second question, whether this physical and mental unfitness does not explain a great deal of the present unrest, the state of mind of many men toward society, toward labor, toward capital, toward organized industry.

From long contact with the industrial clinic I developed the hope that in the industrial clinic we might have produced a better state of mind, both in the employee and in the employer, that will make for a better program of social relationship, a better type of citizenship.

We talk a lot about Americanization; tons of literature are distributed on the subject. Our minds revert chiefly, however, to the foreigner and not to our English speaking people. Nevertheless, the real job of Americanization goes far deeper than that and includes the intelligent coping with such movements as are fostered by the I. W. W. and the communist.

What industry needs above all things is to have the honorable employer properly interpreted to the employee, and the honest employee properly interpreted to the employer, if we wish in the future to prevent the fierce conflicts between labor and capital. There must be a laying of the cards on the table between the man at the workbench and the man in the office, in order that the fellow

in the office may understand the mind of the worker in the shop, and *vice versa* that the worker may understand the man in the office. They both must get the idea that the other fellow is a pretty decent chap after all when you get to know him.

I believe that industrial medicine in a labor policy is something industry must reckon with. I think it can be made a most natural approach to the subject. There is nothing artificial about industrial medical service. It is needed, and it is used. It is never looked upon by the worker as just another mechanism for the employer's advantage, for good service of this type sells itself. It is usually set up by the employer who wishes to render a real service to his men, and in this it is unlike so many schemes of employee-relationship which were hastily organized to meet an emergency labor problem. But only a doctor of the right sort, it goes without saying, may render such service. Industry, however, must learn that out of a cheap doctor can come only a cheap result.

### Conditions Problematical

It has been difficult for me to meet our Association this year with anything like the enthusiasm and energy with which I have approached every other meeting. Up to this time, we have always been on the ascent. Industrial medicine was growing, pushing forward, and progressively building up in the minds of the profession the idea that here was something that had come to stay; that industrial medicine was going to make a real contribution to society, and that capital was backing it up and going to help push it forward. We felt justified in going out and acclaiming that fact to the profession at large and urging them to leave individualistic treatment and take up the supervision of great masses of society, thus employing their energies in wider fields. But, the world cataclysm has also affected the industrial physician. At least, a number of them have lost their positions. This is a very serious thing. We cannot hope to hold doctors in industry when, with the turn of the wheel, or the lack of the turn of the wheel, their jobs may cease. They do not have to come to industry for a living, and they should not come to industry when that living is uncertain. Unless we can operate and work continuously in industry, we cannot stay in industry. Some of us are on the firing line, trying to induce others to come into the work; but we have got to stop doing this un-

less industry finds a way in which the well trained, socially minded physicians can give themselves to this work, assured of a continuance of work; otherwise, the progress of industrial medicine is really seriously threatened.

My present plea, therefore, is for industry not to take this matter of industrial medical development too lightly. The opportunity for the medical profession to serve society and industry is just emerging. We have just scratched the surface in this matter; because, linked up with industrial health work are the other phases of community health work, our state program, our national program, which today are limping along under partisan control. Today medical men are out in the front, begging the communities to save themselves from ill health, which means lowered production, lowered per capita wealth. When industry finally seizes this idea that it pays the community—of which the industry is a part—to be well, then industry will take up the fight for health, better living conditions, and better working conditions. Then we shall have in the Nation, the state, and our cities, health departments free from politics and supplied with sufficient funds. After all, industry produces much of the wealth of the country. She finally pays the bill for ill health. She can better afford to pay for its prevention.

### Labor Union Establishes Health Department

Believing that "in sanitation and health as well as in economics the salvation of the workers depends upon the workers themselves," the International Ladies' Garment Workers Union of New York City has opened the Union Health Center. Located at 131 East 17th street, in a building which was bought, reconstructed, and equipped by eight locals of the union at a cost of \$100,000, the health center is described as "a center for all sanitary, medical, and health activities of the International Ladies' Garment Workers Union Locals in New York City to serve the health needs of 100,000 garment workers." Provision is made for medical examination of all applicants to the Union, for examination and treatment of members entitled to sick benefits, for first aid and surgical treatment of the injured. There is a fully equipped dental clinic where members may secure treatment at very moderate cost, a workers' diagnostic clinic, and a workers' life extension institute.

# Medical Service As Affecting Industrial Relations

## Specific Problems, But Not the Whole Load of Medical Treatment, Are on Industry.

By HOWELL CHENEY, CHENEY BROTHERS, SOUTH MANCHESTER, CONN.

THE ground has been so well covered that there is really nothing left to do but to take up the challenge thrown down by Dr. Geier, who turned to us and asked, "Where are we at?" I may as well confess at the start, that I am not at all sure that I know just "where we are at," but I have a fairly clear idea as to where we are going. There are three parties to determine the direction. We find the physicians, in their "whereatness," in a frame of mind perhaps of doubt, perhaps of disappointment. They have seen men whom they knew to be first class men dropped from the ranks of the industrial physicians. They have seen idealism thrown out of doors, and they ask "was it for this that we gave up our chances in a profession where promotion was contingent upon individual effort? Was it for this that we sacrificed that ancient bond between a physician and his patients and threw ourselves under the control of a corporation?"

### Measure of Progress

I appreciate some of the reasons and some of the causes of these doubts and disappointments. We have seen, in this endeavor, many fools rush in where angels might have feared to tread. We have seen, during the war, employers undertaking work of this kind without having gone down to the roots of what they were doing—without having perhaps any more definite purposes than, on the one hand, the promotion of an advertising campaign which they thought might bring labor to their doors; or, on the other hand, the half-baked thought that the providing of medical attention was cheaper than increased wages. Or, perhaps the sentimentalist had gotten hold of them and really made them believe that they were their brother's keepers in this field and that it was up to them to see after the health of their employees in a paternalistic fashion.

These failures give no cause for discouragement, as they merely represent mistaken or insincere attempts to carry out a half-thought-out program, or no program at all. If I mistake not, the physician's doubts as to the direction are due to

*Industrial medicine is general medicine plus several specialties. Each industry presents in addition to sanitary problems specific physical and physiological elements. With the personal equation are bound up questions of relations. The successful industrial physician, therefore, needs to be scientific, ethical, sincere, open-minded, equable, and always keen for further research into industrial health conditions. His special work should entail no material sacrifice or moral concession.*

the failures of misguided efforts, rather than of fundamentally mistaken purposes.

Where is the worker at? How far along has he come? I doubt whether we can measure, or whether any of us have the means of estimating, the force of the program for public health that the war put over. To millions of workers the idea has come that if health is not a purchasable article, it is in some indefinite way an obtainable article. On the part of the worker a trust in its possibilities, a knowledge of its opportunities, has taken the place of suspicion and doubt. There your field is fertilized and your path is open for development.

Where is the employer at? Just now he is spending a good many hours a day trying to figure the balance on his ledger and it is often a discouraging problem. You have no idea how black—how hard the pull is. He is at the point of view where he is questioning, for the time being, not "Does this thing pay in actual dividends?"—because there are very few who are fools enough to believe that its value can be measured in dollars and cents—but, is it really worth while? He goes to every physician and makes him give grounds for the faith that is in him. These articles of faith must be expressed in something more definite than terms of pure idealism or sentimentalism. He asks to know the facts and insists upon having the bearing of these facts upon his pro-

duction. Does not that represent, as accurately as any of us can, an answer to the question of where the employer is at today?

### A Few Guideposts

In what direction are we going? Well, I shall have to modify my statement that perhaps I knew where we were going, and say that we know some of the guideposts along the road we are going and we can pick them up one by one. The first guidepost, and the one that hits us squarely in the face, is that we have neglected and forgotten and misapplied, the real character of the physician's profession when we tried to induct it into industry. That vital and difficult subject of medical ethics, I cannot pretend to master. At some pains, however, I have dug out at least two signposts in it and when either of them is neglected you have side-tracked your position and lost your way. The first and most vital one is the insurance of a personal relationship with his patient. His profession, it is true, is the application of science to the service of others, but I believe that the medical profession, as in the oldest days of story, is also the art of practice, as well as the application of science. If the physician does not maintain the personal relationship with his patient, he has violated what is most valuable in his hold on medical ethics and has lost his way for the time being.

Of the same nature is his protection of the confidence and trust of his patient. Whatever passes between himself and his patient is a privileged communication. It cannot be an employer's or the public's knowledge. Why? Because, if I see rightly, the art of practice is the giving of one's self and the receiving of one's self into confidence. If that becomes public knowledge, it violates this confidence. It violates every consideration of personality and of individuality; hence, the physician who betrays that confidence is outlawed by the individual patient. In trying to establish a different kind of relationship between physician and patient, he has been warped from a necessary restriction of his profession.

The second guidepost presents a



difficulty less important in its bearing on industrial medicine, and that is the relationship of the industrial physician to his fellow practitioner. I never knew a crowd of men so bent on protecting each other—so keen in realizing that his colleague's reputation is his true stock in trade; that when it is taken away the foundation on which he rests is gone.

I do not believe that the physician entering into industry needs to alter in any way what should be the relationship of the industrial physician to his fellow physicians. If this has happened, it is the fault of individuals and of jealousies arising out of a new plan rather than of any necessity of the situation.

### Difficulty Unnecessary

What are the signs guiding the employee in the direction in which he is going? He also properly insists that the state of his health and the disease from which he may be suffering is not the proper knowledge of the employer and cannot belong to him. When he offers himself to the physician for treatment, the results of that examination must remain inviolate on the employer's part, just as on the physician's part. Violate that idea, and at once the basis is laid for suspicion of the medical department by the employees. Unless it is respected I do not believe you can have a proper medical department.

And what are the signposts that are guiding the employer? I shall have to take issue for a minute with a previous speaker. Industry can only produce something in so far as it produces goods at a profit. Industry, under the older conception, existed only to produce goods at a profit, but we are all conscious that a higher conception has come into the management of industry. But still, society holds us responsible for the employment of capital at a profit. Society, however, also insists more and more strenuously that we can only use that capital so long as we do not injure the community and our fellow men. Society is coming to insist, perhaps not quite so strenuously, but with unerring determination, that we shall not use that capital unless we use it for the promotion and upbuilding of the community in which we reside, and is not content to measure our responsibility by the easier task of whether we are damaging the community or not. When you come to apply the test, "Are you so using this trust so that it is working for the upbuilding of your fellow men and the

community?" there is coming home to the employer both through his own pride and an inexorable legal force, influences which make him study his problems as he never studied them before.

We will agree that all of these signposts have nothing really discouraging in them. They point clearly towards an attainable goal.

### What the Load Is

Next, in passing these guideposts, what is the load that we have to carry? Perhaps it is because it was so clear in your minds of what items made up the load that they have not been touched upon, except in the most general terms. Let us run over them hastily. The cases that are already loaded into these vehicles are: (1) The examinations for employment; (2) the first aid treatment of all minor disabilities occurring within the plant; (3) the entire treatment of all industrial accidents; (4) a far more thorough examination and research into all of the production problems connected with health that are becoming more and more important to the industrial capacities of our plant; (5) the life extension work in which the enterprise of the Life Extension Institute of New York has led the way with such clearness of vision; and (6) finally, the medical administration of mutual benefit or fraternal associations. They especially have been a constant force for education in helping to carry all of the various parts of the program.

### The Vehicle

If we have arrived at any conception of where we are, or in what direction we are going, and of what the load is, we must consider the kind of vehicle that is going to carry that load. We have tried two kinds of vehicles. The first was a failure. That was the part-time physician, the practising physician who was called into industry on a part time basis. Why did it fail? Because the private physician had only a very vague idea of the problems of industry. He could not approach them with experience. He could not for one moment get himself out of his idea of a personal relationship with his patients. It also failed because the part-time men were only partially trained in the use of the diagnostic facilities offered and were poorly equipped for the group task before them.

The other experiment, which is found in many plants, is the full-time physician, clearly recognizing his relations to the industry and his rela-

tions to the employee. It seems necessary for his success, so far as we have been able to observe it, that he shall say frankly, "I have no business with the bedside cases or with the serious cases of acute illness." We must offer every facility for diagnosis and for consultation but, except in the treatment of ambulatory cases, our whole effort must be to give the actual care of acute illness to the family physician. That is the only possible way in such cases. It is the only way in which all of the parts of the treatment of the case can be covered. No one in industry has yet any conception of the possibility of taking on the whole load of medical treatment. As I look on it, it is impossible from either a social or an economic point of view.

There is a third vehicle—suggested by the valuable work that the Life Extension Institute has done—of an association of physicians offering their services to both employers and employees, combining in one cooperative association all the most highly developed diagnostic aids available, which probably would be beyond the reach of any single physician; often, by calling in a specialist in consultation for special cases, dividing the expense, which at present is a difficult matter to divide. But, on the whole, the part that can be charged to the employer is becoming plain. He must pay for the examinations for employment, for the cost of accidents, and for the most valuable work in research. He can afford to pay a large part of the burden of expense for capital equipment, but when it comes to the burden of individual treatment of sickness, that must be borne by the individual patient. But you industrial physicians can make it possible for the day laborer to have every diagnostic facility and to have within his call specialists for consultation. When you have done that, you will have solved the relationship with the individual, as you have already solved the relationship with the industry.

This, of course, is not at all a new idea. You will find parts of it at work in many fields. You will find it in many clinics. But, this I insist upon: that while the man, or association of men, who are going to tie up with industry must retain in all their integrity their individual relations with their patients, they must study the problems of industry and meet them with sincerity, with intelligence, and with knowledge. There is the vehicle. It may be an imperfect one, but, at any rate, many members of this association have the vision and

are daily working out its difficulties and removing the obstacles that have seemed impossible to overcome at the start.

### The Goal

We have heard of late just one note of pessimism. Is the goal worth while? Surely, if we know in what direction we are going and have the means of transportation, we are going to arrive, if the goal is worth while. I cannot take seriously the idea that after these seven years there should have been any discussion as to whether the goal is worth while. Certainly the goal of the engineer in human efficiency, which some of the doctors took to themselves as a title, was an impracticable one and they were quite unprepared to maintain

and carry that journey out. Let us, as doctors of medicine, forget forever the title of "human engineer," and let us return to the oldest term of the profession and become "physicians to industry" with absolute insistence upon personality in the service that we are rendering. Then many of the clouds around that goal will clear away and open up a brighter vision.

To some degree the stability of these United States depends upon the effectiveness of your contribution of medicine to the industrial organization. The elements of this organization become daily more clear to us. It is impossible to doubt that the industrial physician has made a great contribution to this job of bringing about better relations between the em-

ployer and the employed; that should he go, industry will have lost what it never can replace in other ways. Having achieved that vision, the battle is half won.

To the members of the Association of Employment Managers, I will say that if they can express to every individual in their ranks the assurance that there is a way out—that through education, through self-expression, through representation, and through physical upbuilding, they have the means within their knowledge of finding the way out—the problem is at least in the way of solution. In the finding of that way out, nothing can be more effective in raising the physical and mental tone of employees than the instruments in the hands of the industrial physician.

## Work of the National Industrial Conference Board

### Shall the Community Assign to Industry the Public Health Concerns of the Worker?

By C. C. BURLINGAME, M.D., CHENEY BROS., SOUTH MANCHESTER, CONN.

THE Conference Board of Physicians in Industry, formed seven years ago, has recently allied itself with the National Industrial Conference Board as its official advisor on medical problems in industry.

Five years ago another board of physicians who were devoting their entire time to industrial medicine was formed in New England and became the New England Conference of Industrial Physicians, of which organization I serve as Chairman.

The men in the Conference Board of Physicians in Industry came from all parts of the country and grouped themselves together to solve industrial medical problems. In New England thirty so-called full time men banded together for a like purpose, and I feel sure that an expression from all these men would indicate that the greatest importance attaches to the problem of where the physician in industry is going. Certainly none of them would say that the goal of industrial medicine is not worth while, though they may still be in doubt as to the best vehicle for reaching the goal. But, when all is said, the physician is essentially an individualist and must give of his personality to his people. If, after sinking his personality in the industry and becoming in reality a part of it, he then finds that he is out of the industry,—that his services are dis-

continued because of hard times or other causes, it is no wonder that the physician may be discouraged. It is not money—the dollars and cents lost—nor the position sacrificed, but his opportunity for service in a chosen field and the fact that he may feel he has lost his chance to be worth something to society, that makes him uneasy and discouraged. It was for service in society that he was born and educated.

The young medical man of today can afford to take the chance while the problem is being worked out, and he is still young. But can he fifteen or twenty years from now take a chance on seeing the excellent work, the best efforts in his life, thrown over in a period of business depression, and he a man without a job and with doubtful opportunity for service? This is the question asked by men in industry who are trying to get good medical men to help solve the problem of medicine in industry.

### The Question of Value

We industrial physicians very glibly say that industrial medicine pays, but, personally, I do not know that anyone could prove it. I have compiled many figures but cannot say that they afford mathematical proof that industrial medicine pays. Certainly those massed figures do not convince those who are paying

the bills of the fact, but it is by rather obvious logic and by the review of individual cases that we can demonstrate to the employer that to supply industrial medical service is good business policy.

There is no executive who maintains a medical department who cannot tell some other employer about some case which, if it had not been handled by the company doctor, would have cost a great deal of money and several lives. These things are all true and it is good for the doctor to tell the executive about it. It is part of the executive's education, and medical men all know how necessary it is to give these executives some education on these lines and in the realm of medical ethics.

Men have related to the Conference the difficulty encountered in training officials to realize that there is such a thing as medical ethics and that every time the medical director finds a nice juicy bit of scandal the executives are not entitled to know about it. When the executives asked, "What is the matter with Smith?" it is somewhat of a task to tell them politely that it is none of their business. They have to learn that they must look to the doctor to deliver an end result,—a man or woman better able to stay on the job. It is hard to get the executive to realize that, with the doctor in the pay of the company, the

doctor owes his first allegiance to the patient; he must serve the patient first, last, and all the time, and that in so doing, he best serves his employer.

I suggested as a topic for discussion, "What do we think of our employer?" This was meant in a spirit of kindness, because, after all, we must admit when we get together, that we find it easier to educate the employer in medical ethics, and to educate him as to what the position of the medical man in industry should be, than it is to educate the medical profession as a whole.

Our task is to bring the physicians generally to recognize the fact that industrial medicine is worth while, and to ask for it the support of the American Medical Association, and the support of every other ethical medical body.

The non-professional people may be assured that we physicians have not lost confidence in industrial medicine. It presents its own problems, which we are going to solve; and we are going to make the sacrifices that are necessary to solve them. But there remains open the question whether the thing which we call the industrial medical problem will be

solved in industry and in the pay of and under the direction of industry, or as a community problem, to be met by the community and by the people as a whole. Whatever group assumes the responsibility for the problem, we are going to stay with it until it is solved.

At the close of the evening, Mr. Charles A. Andrews addressed the assembly as follows: It is, of course, an unusual and supposedly improper thing for a toastmaster, who is a mere layman, to undertake to add anything to the program after it is completed. Just one thought that I should like to leave with you, for what it is worth—and you will conclude for yourself whether it is worth anything or not. We have had references made to the problems to be solved by the physician in industry; and we have had references to the problems to be solved by the industrial manager with relation to medical practice in his industry. These two problems are, to a considerable extent separate; one for one group, and one for the other group; but there is one problem which can be solved only by the management and the physician together, that is the

problem of bringing the employees to understand that medicine in industry is not something that is being put across on them by the management, for the sole purpose of getting more hours of efficient work out of them, and thus to increase production and profits. If the employees think that this is the whole of the story and its incentive, however wise the management, however scientific and efficient and helpful the physician, we will not get very far in establishing in industry a medical practice with the ideals we have advocated. There is much more than science to it and much more than the application of science. Some way or other, doctors and managers must together make it so clear that it cannot be misunderstood that there is something in the program other than a further exploitation of the employee for the sake of profit, that there is in the program a further and better thing—abundant hope that medicine in industry has come to stay and to be of increasing usefulness, contributing to the daily contentment and well being of the men and women in industry in order that they may be better men and women and more useful citizens.

## St. Louis Southwestern Railway Medical Service

BY A. E. CHACE, M.D., CHIEF SURGEON, ST. LOUIS, MO.

THE scope of the work of a medical department serving a railway company is only partly indicated by tabulated figures, but some idea of the service of the St. Louis Southwestern lines may be gained from the statement that during 1920, a total of 14,067 cases—1,527 of them personal injury cases—were cared for by the medical department. Nearly all were men, and in the care of these cases over thirty-one thousand days of hospital care were given, and 26,267 prescriptions written and filled; 123 major and 297 minor operations were done; 260 Wassermann tests made; 6,030 dressings of wounds done; 34,341 venereal treatments given; 615 roentgenographic examinations made; 2,174 dental treatments were involved; 4,191 laboratory examinations by the pathologist and many more by the surgeons were performed.

From these figures it will be seen that the ten thousand employees make free use of the medical service. The graphs in Figure 1 indicate the yearly fluctuations.

Founded in June, 1887, this is one of the older medical departments in

industry. First occupying an altered house as hospital at Tyler, Texas, the work grew until, for several reasons, it became necessary in 1904 to build the present hospital at Texarkana, Ark.

The St. Louis Southwestern Hospital can now care for eighty white, sixty-three negro, and eight contagious patients—a total of 151 patients. When the nurse's home is completed, permitting the rooms on



The hospital of the St. Louis Southwestern Railway, located at Texarkana, Ark.

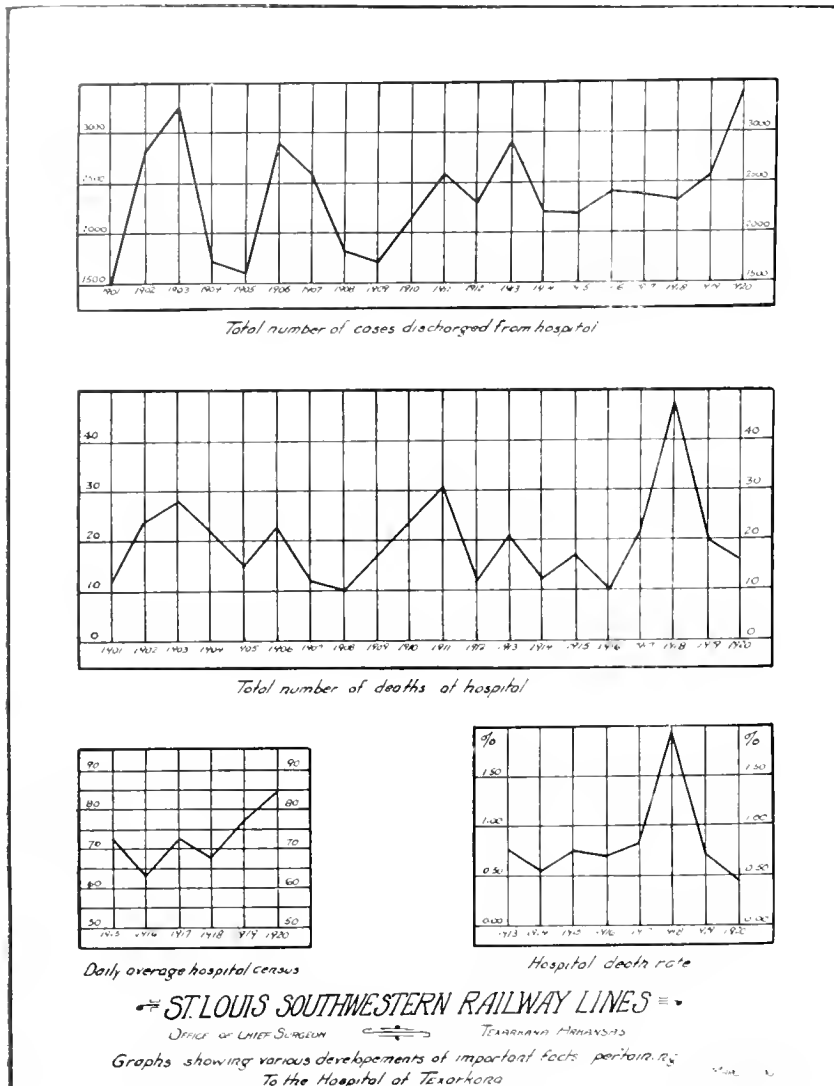


Fig. 1. Graphs showing fluctuations of service from year to year.

the third floor of the hospital, now occupied by nurses and staff, to be used for patients, the capacity will be increased to two hundred.

The main hospital is composed of four buildings, three of which are connected by covered bridges—the hospital for white patients, the negro and surgical pavilions. The heating plant and work-shop adjoin the negro hospital. Cases of contagion are handled in four small frame buildings about two hundred yards from the main hospital. About thirty acres of park and pasture, a modern dairy barn, a horse and vehicle stable, two pump houses, a frame cottage, and a brick railway station complete the major equipment.

In the first story of the surgical pavilion, ground level, are the bath rooms, receiving ward, and surgeon's office. On the second story are the main operating room, sterilizing room, wash room, minor operating, dressing, and dental operating rooms.

On the first story of the hospital for white patients are two venereal wards, orderlies' room, x-ray and dark rooms, game and reading room, three dining rooms, kitchen, pantry and three store rooms. On the second floor are the wards, each containing from four to ten beds, laboratory, pharmacy, diet kitchen, service rooms, and three offices. One of these is the hospital office, another is for the superintendent of nurses, and a third for the medical department of the railway. The third floor is now occupied by nurses and staff.

The negro hospital contains six wards for colored patients, one for Mexicans, a dining room, dressing, and examination room, and the usual service rooms.

An electric elevator, centrally located, with a five by eight foot car, serves the three buildings. Screened galleries on the south side of the white, and east side of the negro hospital, will accommodate twenty-five

patients, and it is seldom unpleasant in this climate to sleep out of doors.

The locations of the fifteen emergency stations and the location of the eighty local surgeons are shown on the map (Fig. 2). The emergency stations consist of part time, salaried surgeons who maintain the offices, small first aid equipment in shops and round houses, arrangements with nearby hospitals for temporary care, and contract with pharmacies at these points. Here employees receive temporary care until moved to the St. Louis Southwestern Hospital, or they receive treatment for ambulatory cases.

### First-Aid Materials

All baggage cars are supplied with cots, or United States army stretchers. The cots, especially, are frequently stolen, so it occasionally happens that, at the time most needed, they are not to be found. The stretchers, clearly marked in large letters, do not seem to be so magnetic.

Small packets are always on hand for distribution upon request of conductors or engineers. It is not the policy of this department, however, to encourage the surplus or wide distribution of first-aid material for use by half-trained laymen. This would not only be wasteful, but cause suffering and economic loss far in excess of the occasional benefit. Proper labels clearly outline the type and indicate the proper use of this material. Thus the equipment of this department consists of: (1) a centrally located hospital, (2) fifteen emergency stations, (3) eighty local surgeons, maintaining offices, and (4) the proper distribution of first aid material.

### Personnel of Department

At the fifteen emergency stations, thirty-four division, assistant and associate surgeons and specialists are carried on a salary basis for part time work. The salary is based upon the amount of work done, taking the average over a period of years.



The main hospital is composed of four buildings. The heating plant and workshop adjoin the negro hospital.



The laboratory handled during the year reported 4,191 pathological examinations, not including special work done by the surgeons.

The eighty local surgeons are under contract on a fee basis. The fees average a little less than the charge in private practice; in some localities equal to these charges, in other towns less. All surgeons receive an annual pass.

The hospital personnel consists of a chief surgeon, internist, one house surgeon, one assistant house surgeon, one assistant house surgeon in charge of venereal diseases, an eye specialist, ear, nose and throat specialist, consulting anesthetist, four consulting surgeons, a pathologist, a roentgenologist, a dentist, a superintendent of nurses, a night supervisor of nurses, an operating room nurse, chief clerk, hospital clerk, an accountant, a house keeper, an engineer, a carpenter, a steward, student nurses, cooks, orderlies, milkman, etc.

The chief surgeon is a full time officer of the railroad, is held responsible for the entire medical department, appoints all surgeons, reports directly to the president, and is expected to perform all major operations at the hospital, except when out of town the consulting surgeons operate.

### Management of Department

The funds necessary for the support of the medical department are derived from two sources. The railway company appropriates money for the capital charges, and makes up any deficit in the running expense. The employees voluntarily contribute, by monthly deductions, an amount which under normal conditions is expected to cover operating expenses. These deductions are made on the basis of the amount earned during the month.

Earnings	Monthly Payment
\$ 5-\$ 50	\$.040
50- 100	0.60
100- 199	0.70
200 and over	1.00

The rules governing benefits define very definite services. Thus all illness or injury resulting from vicious habits and unlawful acts is excluded,

except venereal diseases. A limit of six months, with exceptions at the discretion of the chief surgeon, is fixed. All benefits terminate when an employee leaves the service, is discharged, or is excluded for cause. An injured man is entitled to treatment anywhere on the railroad until he can be moved to the St. Louis Southwestern Hospital, or, if that be impossible to one of the other fifteen hospitals with which the railroad has arrangements for the care of its employees. A sick employee must consult a salaried surgeon, known as Division Surgeon, Assistant, Associate Division Surgeon, or Specialist. Such surgeons are located at the fifteen emergency stations, where an employee may also have prescriptions filled free of cost at the company pharmacies. All employees too ill to work are expected to come to the St. Louis Southwestern Hospital if, in the judgment of the division surgeon, he can be safely moved. To avoid imposition, the ill or injured employee, except in

case of emergency, must obtain from his foreman a certificate, known as a red-cross certificate, to the effect that he is a bonifide employee and has had a deduction made on his last month's pay. This red-cross certificate entitles the employee to consultation and treatment by a salaried surgeon at emergency stations, to a pass to the St. Louis Southwestern Hospital, and to treatment in the hospital.

Local surgeons are appointed solely for the purpose of handling injury cases for first-aid care only.

Division and associate surgeons, their assistants and specialists—eye, ear, nose and throat—care for the major portion of the line work.

A sanitary engineer, reporting directly to the president, with a corps of assistants, has charge of such work as malaria control, water supplies, sanitation and inspection of restaurants, toilets, dining cars, stations and other railroad property.

A superintendent of safety, reporting to the vice-president, in charge

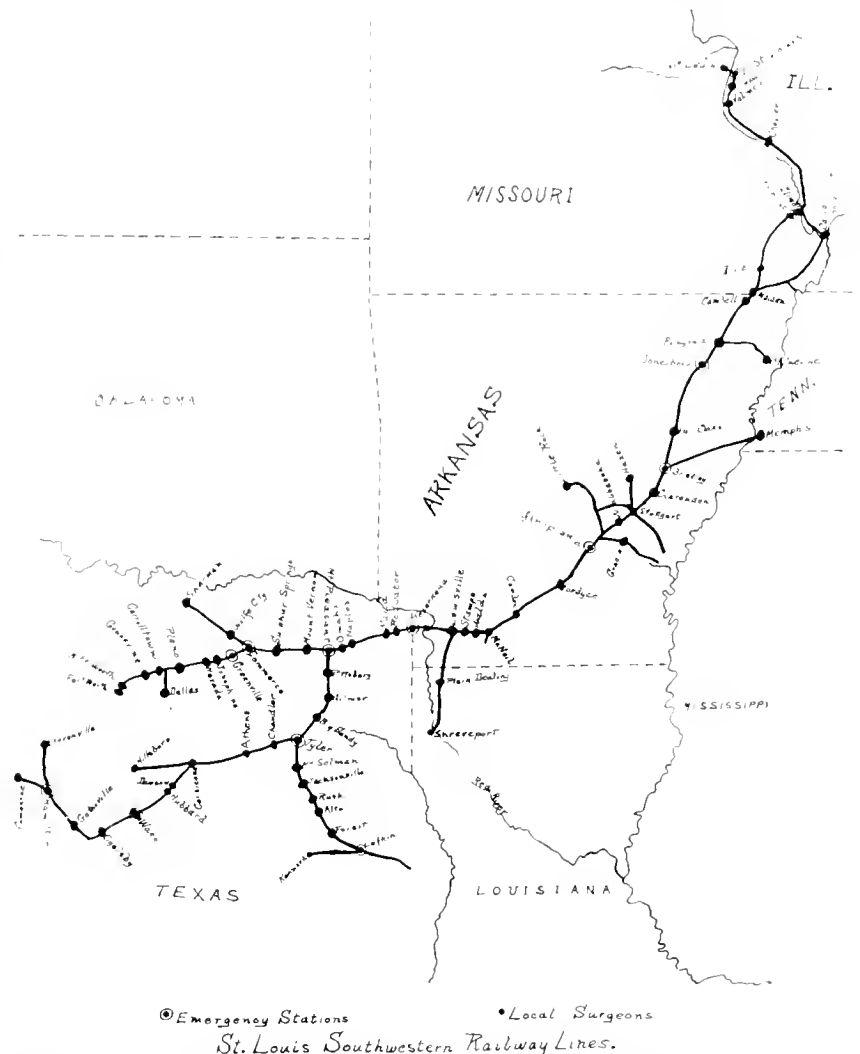


Fig. 2. Eighty local surgeons maintain offices at the points indicated and the location of the fifteen emergency stations is given.



The capacity of the hospital, now 151 patients, will soon be increased to 200, and a home for nurses will be added.

of operation, undertakes to minimize the hazards both on the line and in the shops.

The Legal Department has only one definite relation with the Medical Department. At the time of injury, the first surgeon to attend the employee, makes out a report in duplicate stating the nature of the injury and the probable disability. Both are sent to the chief surgeon, who forwards one copy to the Legal Department. A weekly report of the progress of hospital cases is also made. No information is supplied by the Medical Department which could be construed as a breach of a privileged communication. The only definite relation therefore is the proper one of protecting the railroad against illegal imposition.

### Types of Work

Examination of applicants for employment is a complex. It involves careful job analysis, the application of employment psychology, estimation of the moral risk, searching physical examination, intricate records, salutary and sympathetic advice to the applicant, a follow-up system, and a summarized report. The forms used on this railroad represent a beginning, not an end product, of the present tendency toward complexity.

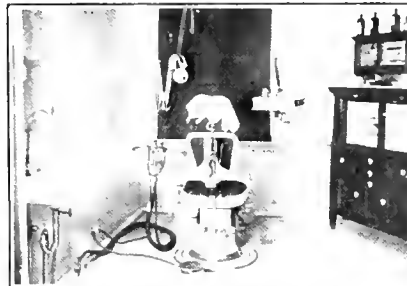
Re-examination of employees is done every three months for food handlers. Never has such an examination been made without finding at least one case of communicable dis-

ease. For employees in train, yard and engine service, re-examination, up to the present time, has been limited to those who appear to their superior officials to require such re-examination. I believe we should have a stated interval.

The care of injury cases has been touched upon. It is the policy of this company to give these men the best first-aid care possible to obtain, to transport them quickly to the most efficient hospital, and if possible to care for them in our own institution until recovery is complete.

In general, slight medical and surgical cases are cared for at the emergency stations, more serious or protracted cases at the St. Louis Southwestern Hospital.

Venereal cases are given free care at our own hospital only. These cases, during the infections stage, are admitted under quarantine, required to wear muslin pajama suits to facilitate control, and reported by name to



Dental work is free to all patients who come to the hospital, whether for this treatment or in connection with other illness.

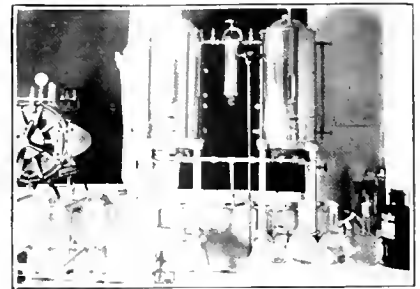
the State Health Officer if quarantine is violated.

All dental work, except crowns, bridges, and false teeth, is free to employees who come to the hospital, whether for this treatment only or in connection with other illness.

Contagious diseases are not of course transported on the trains. Occasionally, diphtheria, smallpox, measles, etc., come into the hospital undiagnosed and receive free care in the isolation cabins. At emergency stations, salaried surgeons care for these cases for a limited time, and afterward cooperate with the health officer.

At the St. Louis Southwestern Hospital, the work is carried out under the plan familiar to all as group practice. Minor illness is looked upon in the light of future possibilities, and due care taken to determine the exact condition.

This medical department is in the stage of transition from the better class of medical and surgical work in



The equipment is provided to supply that better class of medical and surgical treatment now called for in industry.

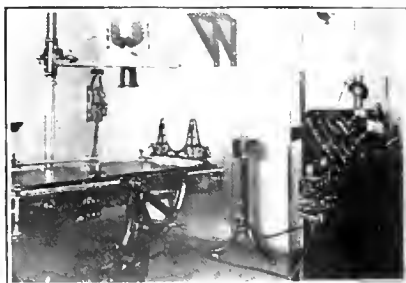
industry to the highly technical combination which we all hope will be better appreciated by all industry in the near future.

### Industrial Tuberculosis and Dust

Three important studies made in the United States during the last decade on the absolute and proportionate ratio of the death rate from industrial tuberculosis and on the relations which exist in different industries between mortality due to tuberculosis and that due to other causes are analyzed in the *International Labour Review* of February, 1921.

In England numerous statistics are available which indicate that in many industrial employments high tuberculosis ratios are associated with high tuberculosis rates. In Sheffield for 1910, for example, it was found that the mortality from pulmonary tuberculosis among grinders was 14.8 per thousand for the age of 18 and over, a very high figure compared with that of 2.7 for all other workers, of the age of 20 and over. The corresponding death rate from other causes was 15.1 per thousand for grinders and 13.7 for other workers. Certain industries have specific influence on the development of industrial tuberculosis. There seems to be a heavy incidence among those in which the industrial dust is made up of crystalline rock. Silicosis dust is at the base of miner's phthisis and is probably the general factor in tuberculosis among ax grinders, although steel dust probably is important.

Methods to determine the content of dust atmosphere and various prophylactic measures are discussed and standards to be established. Standards, however, are only tentative and should be revised according to industrial circumstances. The discussion is based upon the work of C.-E. A. Winslow and Leonard Greenburg, which appeared in the *Journal of Industrial Hygiene*, January, 1921.



Roentgenographic examinations during the twelve months ending in January, 1921, numbered 615.



# Advertise Prone Pressure Resuscitation\*

## The "One Best Way" for Safety Should Be Universalized

BY CHARLES A. LAUFFER, M.D., MEDICAL DIRECTOR, WESTINGHOUSE ELECTRIC AND MANUFACTURING COMPANY, EAST PITTSBURGH, PA.

PROF. E. A. SCHAFER, chairman of the Committee appointed in 1890 by the Royal Medical and Chirurgical Society of London, read a paper on the "Prone Pressure Method" in Chicago, 1908, before the Section on Surgery of the American Medical Association. The conclusions reached by Prof. Schafer are that "a pressure method is best, and that such a method is more efficient with the patient in a prone position, and with the pressure applied vertically over the lowest ribs." To this method Prof. Schafer gave the name of "the prone pressure method."

Even before Prof. Schafer's address in Chicago in 1908, his method was known and employed in this country. When emergencies arise, a multiplicity of methods of resuscitation leads to confusion. The need of adopting some method as the standard was sensed by the National Electric Light Association, whose successive commissions have been epochal in standardizing the prone pressure method of artificial respiration. Leading surgeons and physiologists, industrial physicians, and engineers have labored together on these commissions, with the result that the prone pressure method emerged supreme. It is declared by these authoritative commissions of the National Electric Light Association to be the best manual method, and to be superior to all commercial mechanical apparatus yet devised for giving artificial respiration.

### Adopted But Not Used

Successes attending the employment of the prone pressure method, within and without the industries, have contributed to its quite universal acceptance. Safety committees of industrial groups comprising five million men have accepted the prone pressure method, and it is being extensively taught to intelligent employees within the industries. In short, the prone pressure method is the standard method, but it appears that it has not been sufficiently advertised.

Complaints reached the Safety Committee of the National Electric Light Association that physicians summoned on emergency calls are sometimes quite unfamiliar with the prone pressure method of artificial respiration. Such physicians would doubtless employ it, and assist those administering it, if the prone pressure method were better advertised. First aid instruction emphasizes the slogan: "Summon the physician." Additional assistance is expected from the physician summoned, not negation of the aid being supplied by laymen, trained in prone pressure procedure.

Picture this situation: Artificial respiration by the prone pressure method is being given a victim of electric shock by laymen well qualified in prone pressure. The physician on his arrival says prone pressure is no good, and orders them to stop it. In some cases, it is reliably reported, where the advice of the physician has been ignored in this respect, the artificial respiration has succeeded in restoring the patient; obeying the physician, however, makes it a coroner's case.

Such being the case, what is to be done about it? Is it not incumbent on industrial physicians, who have long employed prone pressure, and who have faith in it, better to advertise the method?

The best technic in giving prone pressure should reach all the physicians of the country through their medical journals. Prone pressure should be in the medical textbooks, so that the coming generation of practitioners will be versed therein. It should be in the school books. There should be better illustrations, and better instructions, in the manuals of the Boy Scouts, the Y. M. C. A., the Red Cross, the National Safety Council, and kindred organizations, devoted to the cause of safety, so that the art of prone pressure may be generally promulgated.

Firemen, policemen, and ambulance drivers everywhere should know how to give prone pressure. Many avoidable deaths occur owing to the interference of policemen in various cities. Policemen often will not permit quali-

fied laymen to administer artificial respiration, and by the time a physician is summoned the patient is dead, resulting in a situation that is tragic. Teaching the prone pressure method of artificial respiration to laymen within as well as without the ranks of industry, is a public safety measure in which industrial physicians have a patriotic duty to perform.

### Advantages Enumerated

The relative advantages of the prone pressure method are too well known to require much comment, but a brief summary may be in order.

(1) Prone pressure is a one-man method. It is easy to learn and easy to apply. Under proper technic, one person can keep it up an hour without undue fatigue. A single operator, alone and unassisted, with no devices other than his hands, and with no assistance from any other instructed person, can successfully resuscitate the victim of accidental drowning, gas asphyxiation, electric shock, or other condition requiring immediate efforts at artificial respiration.

(2) No time is lost hunting up mechanical devices, in which the persons applying them may be unskilled, or which may not be in working condition. As to this latter point, I some time ago ascertained that a certain street railway company had twelve devices, not one of which was in working condition, and that they did not have twelve men competent to operate them. Such apparatus deteriorates, the rubber parts break and leak, so that unless they are maintained in first class condition by daily or weekly inspection, and the replacement of parts made by competent mechanics, they are not serviceable. It may be stated that this company has since scrapped all these devices, and now relies entirely on prone pressure. The tide has set in against mechanical devices for artificial respiration.

(3) Even if a serviceable mechanical device can be obtained, it may not be immediately available. It is unfair to the prone pressure method to say that the mechanical device has resuscitated the victim, when the victim has been kept going by the manual method, and is practically resuscitated.

\*Read before the Ninth Annual Meeting of the American Association of Industrial Physicians, Boston, Mass., June 6-7, 1921.

1. Schafer, E. A.: The Prone Pressure Method, Jour. A. M. A., 1908, li, No. 10.



With thumbs turned out, fingers parallel, pressure is made on floating ribs.

tated before mechanical devices reach the scene.

(4) The manual method elevates the diaphragm, pumps venous blood from the liver and splanchnic area to the heart—which is empty in electric shock—and, by distending the heart and blood vessels by the massage of these parts, it aids in the restoration of circulation. As is well known, in electric shock the heart action may be suspended before respiration is arrested, consequently the manual method, by stimulating cardiac function, holds out the greater prospect of restoring animation in the victims of electric shock.

(5) The use of mechanical devices of the bellows type requires a degree of pressure to inflate the lungs, and a degree of suction to empty the lungs, that is incompatible with normal physiologic breathing. In other words, the mechanical devices are the more liable to do violence to the pulmonary tissues than are manual methods. The manual methods more closely imitate nature.

(6) The water in the lungs encountered in drowning, and the edema of the lungs encountered in electric shock, and occasionally observed in asphyxiation by gases, require that the patient be in a prone position. The prone position not only facilitates the removal of liquids from the lungs and air passages, but it permits the tongue to gravitate forward, thereby making it possible for one man, alone and unassisted, to resuscitate a comrade in distress.

#### When Method Fails

The lack of success sometimes attributed to prone pressure may arise from faulty technic. Especially is attention drawn to the necessity of "placing the hands on the lowest ribs," with the thumbs turned out, fingers parallel, and touching; and making vertical pressure from the shoulders, keeping the arms straight.

The friends of prone pressure have unwittingly damaged their cause in the eyes of many conscientious physicians by the publication of placards and pamphlets illustrating pressure made on the fixed ribs of the thorax.

Pressure must be made on the floating ribs alone. "Vertical pressure on the lowest ribs" is the *sine qua non* of the prone pressure method.

It is in order to study a mounted skeleton, placing it in the prone position, kneeling, and applying the hands, so as to ascertain what expanse of ribs the hands cover. When the fingers are spread, and the thumbs lie parallel to each other, or their tips are turned toward each other, which some of the prone pressure pictures unfortunately present as the proper technic. Some hands will cover six ribs. Consequently, this must be considered a wrong posture for the hands, as only the lowest two ribs are movable.

With the thumbs turned well out, at right angles to the spine, the fingers parallel and touching each other, the expanse of the hands can be confined to the floating ribs. This is obviously the correct position for the hands. This posture of the hands obviates the lost energy which is incident to pressure on the fixed ribs of the chest.

Turning the thumbs outward also wraps the radius around the ulna, thus preventing bending of the arms at the elbow. With the arms thus held straight, vertical pressure from the shoulders is exerted on the outer ends of the lowest ribs.

#### Leverage With Little Effort

When pressure is made in this manner, near the outer ends of the floating ribs, the maximum leverage with the least effort is obtained. The organs below the diaphragm are shoved up against the diaphragm, thereby compressing and emptying the lungs.

Compression is gradual and occupies three seconds, release of pressure is more sudden and covers two seconds. Each act of artificial respiration thus requires five seconds. Twelve times per minute is the recommended rate of operation.

After a dozen years of successful achievement, the prone pressure method has, without the assistance of press agents, come into vogue as the manual method of choice in giving artificial respiration. We believe the

time is ripe for entering on educational propaganda to better advertise this method to the medical profession and to the public. To this end we should agree on the more minute details of the technic, so as to obviate as far as possible all contention within our own ranks, before advertising prone pressure on a more universal scale.

Acting as an authorized spokesman for the National Electric Light Association, and representing the Conference Board of Physicians in Industry, of whose Committee on Prone Pressure Propaganda I am chairman, I very earnestly solicit the aid and co-operation of my colleagues of the American Association of Industrial Physicians and Surgeons, as to the best means of advertising prone pressure.

It is our belief that this organization should approve by resolution the prone pressure method, and should adopt appropriate means of advertising it in an effective manner to all physicians in the country, particularly those within or near the industries.

Especially should a committee of this organization standardize on an illustration. The pictorial presentation of prone pressure tells practically the whole story. It reveals: (1) The patient's position; (2) the operator's position; and (3) the position of the operator's hands.

Rock forward to exert pressure; backwards to release pressure; arms straight; weight from shoulders—fifty words, more or less, tell how to do it. This Organization has an opportunity for constructive work in standardizing instruction in prone pressure in conjunction with other organizations in this field.

#### Divergence of Technic

The divergence of technic in the the minor points of procedure need not occasion controversy. Some of these variations of nonessentials are the following:

(1) Some extend both arms on the ground. Others extend the right arm and fold left forearm under the head. The latter method we oppose, because it affords less facility for gravity to drain the air passages.

(2) When pressure is released, our present practice is to remit pressure, yet retain the hands in position. Others remove the hands. When hands are entirely removed, some operators do not readily recover the correct position with sufficient facility to insure efficient artificial respiration.

(3) Some rules for prone pressure

feature traction on the tongue. Others virtually ignore the tongue, allowing it to remain in the mouth, if the jaws are locked, or letting it gravitate out, if the patient is relaxed.

(4) Some, unfortunately, make the victim of electric shock walk as soon as he is revived. Others carry him on a stretcher, put him in bed and treat him with the same care given

cases of traumatic or surgical shock.

(5) As to the urgency of immediate efforts, there should be no divergence of practice. With respiration suspended, the patient should be given artificial respiration at once, before he is transported to a hospital. An interval of waiting may prove fatal; hence, if conveyed in an ambulance, the prone pressure should be given *en route*.

## Standard for Child Workers

THE child who goes to work between fourteen and eighteen years of age is in need of special protection if he is to arrive at maturity with good health and a vigorous, well developed body, but the means of protecting the child worker have been limited. A preliminary report, Conference Series No. 4, Bulletin Publication No. 79, just issued, by the Committee appointed by the Children's Bureau of the United States Department of Labor to formulate standards of normal development and sound health for the use of physicians in examining children entering employment and children at work contains a digest of types of legislation, standards of administration, points to be covered and the methods to be employed in examination, and the following formulation of standards:

(1) *Age minimum for entrance into industry.*—The minimum age for the entrance of children into industry should be not younger than sixteen years. Since it is recognized that the physiological and psychological readjustments incident to pubescence (which in the vast majority of cases are not completed until the sixteenth year) determine a period of general instability which makes great and special demands upon the vitality of the child, it is of paramount importance that he should be protected during this period from the physical and nervous strain which the entrance into industry inevitably entails. The committee recognizes the fact that pubescence may occur early or may be very greatly delayed, and is convinced that the longer it is delayed the stronger is the indication of a physical stage during which it is highly inappropriate to subject the child to the strains of industry.

(2) *Physical Minimum for entrance into industry.*—No child between the ages of sixteen and eighteen should be permitted to go to work who is not of normal development for his age, of sound health and physically fit for the work at which he is to be employed.

(3) *Physical examinations for children entering industry.*—The physical fitness of children entering industry should be determined by means of a thorough physical examination con-

ducted by a public medical officer appointed for this purpose. Where possible all examinations should be made without clothing. Before such a physical examination is made, the child should present a definite promise of employment in writing from his intended employer, stating the specific occupation at which he is to be employed.

(4) *Re-examination for children changing occupations.*—The employment certificate should not be given to the child, but sent by mail to the employer. When a child leaves the specific employment for which the certificate was issued, the employer should return the permit to the issuing officer by mail. With each change of employer another examination should be made before the child is again permitted to work, the mode of procedure to be the same as in the issuance of the original permit. When a child is transferred to any occupation in the same establishment differing in its physical demands and hazards from those common to the occupation for which the permit has been issued, this must be communicated by the employer to the issuing officer in writing, and a new physical examination of the child made and a new certificate issued.

(5) *Periodical re-examinations for all working children.*—All employed children up to the age of eighteen should have at least one yearly physical examination, to be made by a public medical officer appointed for this purpose. Whenever in the judgment of the medical examiner more frequent examinations are desirable, the child should be ordered to report at stated intervals for this purpose. These examinations should take place either in the certificate issuing office, in the continuation school, or in the establishment in which the child is employed.

(6) *Centralized control of methods of examination.*—In order to insure uniformity in methods of examination in each State the State labor or other department administering the child labor law should have authority to make rules and regulations relative to methods of examination and qualifications of examining physicians, to prescribe record forms, and to require reports with reference to examinations made. Each such department should employ one or more physicians qualified in industrial hygiene, who shall be authorized and required to

supervise the work of the local examining physicians.

(7) *Desirability of physical examinations of children during school and pre-school period.*—Many of the physical defects found in children applying for work permits could easily have been discovered and cured, or prevented altogether, by proper examination and treatment during the child's school life, or even earlier. The committee therefore urges the necessity for the provision of adequate facilities for medical examination and treatment of all children of school and pre-school age.

(8) *Need of study by local administrative and medical officers of occupations in which children are employed and of their effect upon health.*—Occupations in which children are likely to be employed should be made the subject of special study for the purpose of ascertaining their physical requirements, and their effect upon the health and development of the growing child. The examining physician should be authorized and required to visit periodically industrial establishments and to familiarize himself with conditions of employment and with the various health hazards of industry.

(9) *Need of authoritative scientific investigation.*—The committee recognizes the impossibility of formulating definite physical standards for children in industry which will be complete and finally authoritative without a great deal of further scientific study of the effect of different kinds of work upon the health and physique of the adolescent child.

Research is especially needed with reference to:

- (a) The rate of growth and development of children employed in different occupations and industries as compared with children not in industry.
- (b) Morbidity among children employed in different occupations and industries as compared with children not in industry.
- (c) Mortality among children employed in different occupations and industries as compared with children not in industry.
- (d) Fatigue in children employed in different occupations and industries.
- (e) Effect of employment in specific occupations at different stages of physiological development upon the growth and health of—(1) Normal children. (2) Children with certain physical defects (such as compensated cardiac disease or with orthopedic defects) or with a personal or family history indicating predisposition to certain diseases.
- (f) Effect of employment in specific occupations upon the menstrual function and pelvic organs of adolescent girls and young women.
- (g) Types of work desirable for: (1) Children and young persons with some mental defect who, nevertheless, are able to fulfill the educational requirements necessary to obtain em-

ployment certificate. (2) Children and young persons who are suffering from certain physical handicaps, such as the partially disabled child and the child with seriously impaired vision or hearing.

(b) Industries and occupations in which children are customarily employed with special reference to health hazards.

Material for at least the greater number of such studies might effectively and economically be secured from the records of examinations made in the public schools and in connection with the issuance of employment certificates in states where re-examinations are required. It is, therefore, urged that all such exam-

inations be scientifically and thoroughly made and that methods and record forms be standardized so as to be statistically comparable.

(10) *Certain tentative minimum standards obtainable from results of scientific research already available.*—While recognizing the necessity of further study, the committee is of the opinion that the results of scientific research already available, together with the experience acquired in the administration of laws prescribing physical requirements for admission to industry, permit the recommendation at the present time of certain tentative minimum standards. The acceptance of these standards will aid materially in safeguarding the physical welfare of the child obliged to enter industry before reaching his full development.

## Recent Compensation Decisions

THE International and Great Northern Railway Employees Hospital Association, which was formed to provide medical and surgical treatment for its members and to include all the employees of the International and Great Northern Railway Company, was in a recent case held not to be an insurance company, but a mutual benefit association, and its contracts with its several members cannot be regarded or construed as contracts of insurance.

A rule of the Association was held not to authorize the treatment of a member away from the line of the railway, or by other than one of the physicians of the association, and a member who was taken suddenly sick in St. Louis, Mo., while in the performance of his duties as an employee of the railway, was not entitled to receive from the Association money expended for medical services, although under his contract of employment with the railroad he was required to pay monthly dues to the Association.

In the course of his employment the employee started from Houston to Chicago, but became seriously sick, with typhoid fever, and arrived at St. Louis delirious. He was there taken to a hospital and treated but at no time was in a condition to be carried to the defendant's hospital at Palestine, Texas. He claimed that the amount of his expenses, and charges for nurses, physicians, surgeons, medicines, hospital fees, etc., came to \$1,193.10; that he was too ill to communicate with the chief surgeon of the hospital; that the officials of the railway operating for the United

States Railroad Administration knew of his sickness, as well as members of the defendant's trustees and its chief surgeon; and that the defendant was a mutual benefit, health and accident insurance association. The defendant answered by general demurrer and general denial. The trial in the court below without a jury resulted in judgment in favor of the plaintiff for the sum of \$1,193.10.

There was no dispute as to the facts, the only controversy being over the construction of the charter, rules and by-laws of the defendant association. *International & G. N. Ry. Employees Hospital Assn. v. Bell*, (Tex. Ct. of Civil Appeals, June 3, 1920) 224 SW 399.

WHERE an employee killed himself while possessed of an uncontrollable insane impulse or while in delirium of frenzy . . . such insanity or delirium having been caused by pain resulting from diseased condition caused by the electric shock which he received in the course of his employment, his widow was properly awarded compensation . . . *Lapper v. Baldwin Locomotive Works*, Superior Court of Pennsylvania, February 14, 1921, 112 Atl. 458.)

A WORKMAN who had long been afflicted with periodical recurrences of epilepsy was seized with an epileptic fit in the course of his employment in a refining plant, but such epileptic fit was not traceable to his work, nor did his employment contribute in any measure toward bringing on such affliction. During his epileptic seizure the workman became unconscious and fell

against some hot pipes and severely burned his back. Held, that the accident and consequent injury did not arise out of his employment but out of his affliction, and compensation for his injury cannot be awarded against his employer.—*Cox v. Kansas City Refining Company*, Superior Court of Kansas, February 12, 1921, 195 Pac. 863.

A DECLARATION in an action for a servant's death, alleging that the defendant employer undertook to furnish hospital and medical attention, and breached that duty by turning the servant out of the hospital too soon and leaving him without attention, was held to state a cause of action, the defendant being under duty to use some degree of care in discharging the voluntary undertaking.—*Karababis v. E. I. Du Pont de Nemours & Co.*, Superior Court of Appeals of Virginia, January 20, 1921, 105 SE 75.)

THE workmen's Compensation Law should be construed fairly, indeed liberally, in favor of the employees.

Injury resulting from an assault by a workman upon a fellow workman while the latter is engaged in the work of the master is an "accidental personal injury arising out of and in the course of employment" within the meaning of the term as used in Sec. 1 (Art. 2) of the Workmen's Compensation Act.

The test of liability under the Workmen's Compensation Law for injuries arising out of and in the course of an employment is, not the master's dereliction, whether his own or that of his representatives, acting within the scope of their authority, but is the relation of the service to the injury, of the employment to the risk.

While waiting at the bottom of the shaft for a cage to arrive, the petitioner asked the assistant mine foreman and a fellow employee, where the cage was, saying that he (the petitioner) wanted the cage to go out of the mine. Whereupon the foreman becoming angry, applied an ugly epithet to the petitioner, adding, "Why don't you go up the air shaft?" Upon the petitioner resenting the insult, the latter picked up a scantling and struck petitioner over the head, knocking him down and crushing and breaking his skull so severely that he remained unconscious for some time.—*Stasmos v. State Industrial Commission et al*, Sup. Ct. of Okla., February 8, 1921, 195 Pac 762.)

# Practical Methods of Fatigue Elimination\*

## Allied Societies as Well as Organized Labor Unite With Engineers to Eliminate Unnecessary Fatigue.

By FRANK B. GILBRETH, CHAIRMAN, COMMITTEE FOR THE ELIMINATION OF UNNECESSARY FATIGUE, SOCIETY OF INDUSTRIAL ENGINEERS, MONTCLAIR, N. J.

THE first work of those who advocate and practise fatigue study is to arouse a general interest in this study, and especially in the elimination of unnecessary fatigue. The Committee of the Society of Industrial Engineers assigned to this work has succeeded in arousing such interest.

This Committee is international in its scope, and consists both of members and non-members of the Society. There will soon be a hundred members. The number is not limited. The committee aims to consist of members from every line of activity that can profitably cooperate, either in the theory or the practice of fatigue elimination.

### Personnel of Committee

The personnel of our Committee is interesting. We have research workers in medicine, in psychology, in physiology, and in psychiatry; economists and statisticians; representatives of the Department of Labor, national and state; of personnel work; of the American Posture League; educators, representatives of sister societies; an expert in visual education who has also had many years experience in the army and as director of a famous museum; editors, writers, and an advertising expert. It is scarcely necessary, today, to say that we have women as well as men members of the Committee. Two of our as yet small number of foreign members are women.

Being a committee of a society of engineers, a larger number of our members are engineers than belong to any other profession. Some are members of the Engineering Foundation. Some are teachers of engineering—professors, deans, and, in one case, a president of a scientific college. Several are editors. The large majority of our engineering members are members of this Society, although the other great engineering societies are well represented. Many are engaged in consulting engineering, many belonging to the special group

installing scientific management in various plants. Our foreign members represent many of the countries of Europe. We have also a Canadian member, and there will be added within the next month several representatives from Asia.

The Committee has suffered a great loss during the last fortnight through the death of Mr. Lester G. French, editor of the *Journal* of the American Society of Mechanical Engineers. Through his devoted work on the *Journal*, Mr. French has for years been an influence in engineering progress, and in arousing interest in the movement for the elimination of unnecessary fatigue. His accessibility, cordiality and warm-heartedness have been such a factor in the hospitality of the Engineers Building that many of us feel that he can never completely be replaced. It should be the pleasure of this committee to pass a resolution telling of our appreciation of the loss that we have sustained in the passing of Mr. French, and expressing our sympathy to his family.

As for the work that the Committee has accomplished, we can perhaps point to some tangible achievements. Several of our members have done work for fatigue on Fatigue Elimination Day, the first Monday in December. Professor Blessing held the first Fatigue Elimination Day at college at Swarthmore and his program has served as a stimulus and suggestion for others. The most continued and enduring work on Fatigue Elimination Day in England has been done by Professor Henry J. Spooner, also a member of our committee, director of the Polytechnic School of Engineering, London. Professor Spooner holds yearly a competition in which his students write essays on the subject of fatigue, and has not only aroused much interest, but sustained it and maintained his work ever since he started.

Mr. James F. Butterworth has done much pioneer work in disseminating information regarding fatigue elimination throughout the British Empire.

Our members have also written articles on fatigue, conducted researches in fatigue, and introduced fatigue elimination methods and de-

vices in plants. In fact, in most cases the membership of the committee has stood for real constructive accurate work in the elimination of fatigue.

The intangible results of the work of our Committee—the by-products as we might say—have been much more far reaching in their effects than the direct products. The subject of fatigue has become one of universal interest. More and more the literature and the advertising throughout the world shows *thinking* along the lines of fatigue elimination. Therefore, as a committee, and as members of the Society of Industrial Engineers, we may congratulate ourselves that our campaign of arousing interest in fatigue has been successful and profitable. We must not, however, be satisfied with what has already been done, because the small field that we have been able to cover is as nothing compared with the work that we must accomplish in this line.

The subject of this report is "Practical Methods of Fatigue Elimination." If we are to do worth while work, we must insist first of all that the work of our own Committee is practical. There are some very definite suggestions to be made along this line. First, the Committee must be enlarged. We should have at least one representative in every country of the world, preferably more, the number covering representatives in each field that directly affects fatigue. In this country we should have a representative in each section of this society, and in each industry and in each trade. It is especially necessary that we have at once more representatives of allied societies, and some representatives of organized labor. It is suggested along these lines that each person present, connected with the Association, whether a member of the committee or not, hand in to the chairman a list of names of people in any country who would be appropriate members of this Committee. It is suggested that the name and address be given, also the line of life work in which the person suggested is an expert or is interested, and some suggestion of the type of work that he might best be asked to do.

\*A report delivered before the Society of Industrial Engineers, Milwaukee, Wis., April 27, 1921.

While we are increasing our Committee, we must not fail to utilize the material that we have already enlisted. The membership of our Committee should be carefully studied, in order to see what possibilities we have, and the work of the Committee should be functionalized. At this early stage of the investigation of fatigue, which is a comparatively new subject to many, it has not seemed practical to appoint sub-committees, but this subject is one open for discussion at today's meeting. The work of the Committee itself should certainly be functionalized, even though the members are not assigned to particular functions, because the field is so large, in fact, unlimited, and the membership so small, comparatively speaking, that each member may well handle many or all of the functions in his own vicinity and it is not the intention to limit activity merely to the function assigned. However, we as advocates of functional management must see that through utilizing the specialties of our membership, we can make the most profitable advances.

### Collaboration Called For

The Committee is remiss in failing to turn in to the chairman reports or records of work accomplished or suggestions of possible work. This is probably due to the fact that all members of the Committee are busy with other important work. It should be possible, with a group as large as ours, covering as large a field geographically and in the various kinds of world's work, to obtain at once a complete bibliography, a record of current happenings in the field of fatigue, and an enormous body of suggestions, yet the chairman receives comparatively few from members of the Committee on the subject of fatigue except those that are in reply to notices or other letters from him, but this will not deter him, for he promises to continue to push forward the movement for dissemination of information concerning the elimination of unnecessary fatigue until it has been preached and practised in all parts of this semi-civilized world.

Because of the nature of the Committee and great distance separating the members, it is impossible to hold many meetings at which a large percentage of the membership is present, nor is this necessary. Exchange of all data received will not be difficult. The *Bulletin* of the Society of Industrial Engineers acts as an admirable circulation medium for information, and its business manager is an in-

terested and cooperative friend to the Fatigue Elimination Committee.

Fatigue Elimination Day should this current year be marked in some special way by each member of the committee. Professor Spooner's paper presented at this meeting contains an admirable suggestion that each Fatigue Elimination Day be given a specific subject. We believe that the usefulness of data will be greater if it is so divided and grouped. The two papers which come from abroad are both on the subject of the "Elimination of Noise," and Professor Spooner suggests that this topic be made the subject for Fatigue Elimination Day for 1921. We should be glad to have the action of the committee on this suggestion.

A review of our Committee shows very plainly that we have ample material for speakers upon the subject of fatigue. The Committee should be canvassed, in order to discover who are willing to speak, and we shall serve as a sort of speakers' bureau for any interested in the subject.

It should be another duty of the Committee to stimulate interest in fatigue by seeing that the subject is introduced on the platform of every convention of this and other societies. The subject itself is so wide in its scope, since it concerns every member of the community and is equally important in the fields of production, selling, finance, schools and home life, that there is no excuse for not making fatigue a feature at every meeting.

### Permanent Fatigue Exhibit

We might as well also consider the beginning of a permanent fatigue exhibit, which might be sent from one convention to another to arouse interest in the subject. The "Laziest man's table," which is shown for the first time at this convention, is important only as a simple, easily made device, designed to make its user and observer think in terms of fatigue elimination. It is most important at this stage in our development that we emphasize the point that fatigue elimination affects every member of the community, and that much of it is so simple that no training is required to do it, and we should have a large number of simple thought-stimulating exhibits available.

This society should insist that Congress afford room in some of the unused buildings at Washington for a fatigue museum, which was started by one of the members of our Committee, the former head of the American Medical Museum, whose work in the army deserves Congressional

recognition. I refer to Col. W. O. Owen, of the Medical Corps (retired). His work was well under way when he was automatically retired, having reached the age limit in the Army.

The Society of Industrial Engineers has offered a place in its exhibition, at each convention, to the Fatigue Committee. We have not availed ourselves of this space as we should. It is brought to the attention of the committee that it is our duty to ask for and to utilize a far larger space at the next convention, and to furnish Mr. Dent at once material for the Bulletin urging students, inventors, manufacturers, and users of fatigue eliminating devices or methods to place them in this exhibition.

It is also a duty of this committee to plan at this session for our next session at the next convention of the Industrial Engineers. Definite suggestions for program and speakers should be made at this time. On the slips recently sent you with the notice of this meeting was a space for suggestions on interesting speakers. We desire to thank those who filled in the spaces, and to assure them that their information will be utilized and is much appreciated. Concerning the program today, it is interesting to note that the two papers that have been sent in are from abroad—one from Professor Spooner, the other from Mr. J. S. Heoghiemetra, a friend of Professor Volmer, the eminent economist who is a member of our committee and a pioneer worker in the great movement of dissemination of knowledge regarding fatigue elimination, management, and standardization that is taking place in Holland.

The leaders of the discussion, Mr. Segur and Mr. Shephard, represent two branches of our committee—the engineer-installer and engineer-teacher. Mr. Segur has been interested in and has done exceptionally fine work in fatigue study and motion study for years. Professor Shephard is conducting a most interesting laboratory investigation in fatigue with his students. Unfortunately he is not here to present his subject, but has promised to submit a discussion in writing. Other members of our committee have signified a willingness to talk, and will be called upon immediately after the discussion is opened.

### Work in the Future

Finally, as to plans for future development, all of our work so far has lain along the lines of arousing interest and surveying present practice and showing what has been actually done in fatigue elimination and its



study. The next step in our development, for the entire process is carefully laid out to the final super-standardization which should be the work of our committee—lies in gathering together material suitable to be incorporated into standards. Fatigue elimination standards and their exhibition where they will be available to all must be our next goal. *Standardization* is a word of paramount importance today, although not so much—in some instances, at least—in this country at the present moment, as in the countries abroad; this in spite of the fact that in total, this country has done the most. Two recent trips, including an intensive inquiry into con-

ditions in four countries in Europe show that everywhere is coming a realization that the stability which is essential to progress will be secured quickest by standardizing first those things concerning which there is no dispute, and among these fatigue occupies the first place.

From our data already accumulated and from the papers presented today and succeeding papers, we should now proceed to make simple preliminary fatigue standards that may be submitted to our committee, to our society, to the engineering profession, and to the world at large to add to the comfort and happiness of all workers.

the energy and half the money to increasing the power of man over Nature, which would increase the total result which is to be divided among the members of the community, instead of devoting all their energies to seeing how the relatively petty amount that we already produce is to be divided among the producers."

He did not believe that the mere expenditure of money, the mere growth of laboratories and the mere multiplication of students were going to produce a larger crop of men of genius. But the amount of work which was not epoch making but which was absolutely required if great discoveries were to be made could bring admirable fruits both to knowledge and to industry, and for that organization and money were required. It was a great grief to him that the poverty from which all were suffering had compelled a very reluctant treasury to cut down the sum at their disposal. No money was better spent than that on scientific research. No money gave a greater spiritual return, and none was going to give a greater pecuniary return. The Universities of Cambridge or Edinburgh, of which he happened to be Chancellor, were both groaning under a particular disability in the matter. He was often surprised that the imagination of great magnates was not stimulated by the idea that they could really add to the wealth of the whole world by encouraging industrial research. He could not help thinking that it was in part due to an imperfect apprehension of the real facts of the case and to that fatal desire to see the immediate results of any effort that might be made. As regards the material side it was apt to be forgotten that a discovery did not profit merely the company or capitalist who first turned it to account, but it might touch the lives of every dweller in every civilized country, and it was folly to say that that was a low material view of things. The hope he had for the world was that the growth of science and invention would give comfort and leisure where at present discomfort and labor were the only means of producing. That was the ideal of progress which he thought held out the most hope for the future.

#### A Disinterested Public

Perhaps, the part of Mr. Balfour's speech most worthy of attention was that in which he referred to the indifference of the public to science of any kind and to research work of any description. It is a failing of human

## Science Has Served Industry

BY OUR LONDON CORRESPONDENT

WHAT science has done for industry cannot be over-estimated. The prosperity of industry without the aid of scientific methods is impossible and possibly that is the reason why American millionaires with remarkable foresight have given money lavishly in the aid of science and especially of medical science. British rich men are backward in assisting the progress of science, perhaps because they do not understand that in helping science, and medical research, in particular they are really benefiting their country and themselves.

By means of science industrialism reaps its rich harvest which is often rendered possible by a new development of science. Then the captain of industry can become the philanthropist, as so many successful business men in America do become, and by his munificence enable science to open other highways to wealth and assure progress in many directions. However, whatever may be the cause, the lamentable fact remains that money in large sums is not forthcoming in this country to help science in any of its aspects, and in this respect conditions have been considerably worse since the war. Those who used to give, on account of burdensome taxation, and consequently straitened means, cannot do so now, and the newly rich are not sufficiently impressed with their responsibilities or duties to become philanthropists on a large scale. Thus, in this country science languishes. Occasionally there are rifts in the clouds as, for instance when a

few weeks ago an Institute of Physics was opened.

Physics is the most fundamental of all sciences, and therefore its efficient teaching is essential to a proper understanding of medical science. That this is so, is made evident by the establishment of chairs of physics in several of the medical schools of this country. Consequently, the launching of an Institute of Physics, although strangely belated, was a great event in the British scientific world. It was aptly described by Mr. Balfour as "a red letter day in the history of British Science."

#### Physics Fundamental

Mr. Balfour in an eloquent speech at the inaugural meeting said in part that physics was "the Science of Sciences" and it was certainly surprising that this country, which had not been behind any country in the world in the great advances it had made in physical knowledge, had had to wait until 1921 for the foundation of an Institute of Physics. He was afraid he could claim no more than that he was helping on to the best of his ability the admirable work done by the Council of Industrial Research. The public knew little about that work. The public seldom did know much about the things which most deeply concerned them. Industrial research was one of the things which most deeply concerned them. He confessed that when he saw great industrial disputes going on about the distribution of the results of industry he could not help thinking to himself "Why do not they devote half

nature that that which the ordinary man does not understand he treats with contempt, ignores. Science is quite out of his depth and, as he can see no immediate result for himself, he is prone to regard it as a fad and does not wish to be taxed in the slightest to advance it. He does not realize the progress that industry has made and will make by the aid of science, and he requires education on these points. The contempt through ignorance that the rank and file of the taxpayers have for medical science has recently been strikingly exemplified by the manner in which they have opposed all the schemes formulated by the Ministry of Health for the benefit

of the health of the nation. They do not seem to understand that good health is the greatest asset of any nation, and that the nation which is the healthiest, other things being fairly equal, is inevitably the most prosperous. It is obviously of the utmost importance that industrial work should be done under the most healthful conditions, and in order that this may be brought about scientific methods must be introduced. The establishment of an Institute of Physics in Great Britain marks a long step forward on the path which leads to industrial progress because such progress cannot be made without the assistance of science.

## Malingering a Normal Reaction

That malingering is a perfectly normal reaction of simple-minded persons is the opinion expressed by Dr. Tom A. Williams in the April issue of the *American Journal of Insanity*. It is not necessarily a mark of disease. When an individual has not developed mentally to the point where he appreciates the points of behavior which adds good to the community, to condone his attitude, the continuance or the simulation of a disease is maintained as a defense reaction.

The task of the neurologist requires an insight to prevent the acceptance at face value of all the psycho-pathological phenomena the malingering case presents and from being unfair to those who do present a mental or physical disorder. The malingerer is particularly susceptible to suggestion, hence the value of skeptical and strong handed observation in influencing the false attitude of the malingerer.

The genesis of the mental reaction of malingering is often to be found in environmental conditions of childhood, the crisis calling it forth merely serving to exaggerate characteristic tendencies.

Dr. Williams goes on to discuss the fabrications indulged in by perverse mythomaniacs, disease simulation, the functional disorders due to emotion. The examiner's task in such cases is complicated. He must not ignore real symptoms, and must avoid creating suspicion on the part of the patient. Definite tests are possible in given complaints.

As to the legal and moral responsibility, some declare that the more experienced is the observer in the study of mental abnormalities and of the insane, the less inclined is he to give a diagnosis of malingering. There is the real danger on the other hand in the tendency of many alienists to excuse the behavior of every one on the basis of the deviation found. It is precisely those persons who have the least self-control whom it is a menace to relieve of the external controlling principle embodied in the fear of punishment. It must not be forgotten that there is a degree of disordered function which renders it impossible for an individual to respond to continuous stimuli from without, however powerful. Men who reach this degree of neurological deficiency must of course be removed from the ranks for treatment. The keenest discrimination is called for in the differential diagnosis of such cases.

## Letter from the Secretary

THE American Association of Industrial Physicians and Surgeons was organized in the early part of 1916, by Drs. A. M. Harvey, H. E. Mock, C. G. Farnum, J. E. Stubb, W. E. Post, T. R. Crowder, and S. M. McCurdy, to promote medical work among the industries and the more general understanding as to the benefits derived therefrom, and to unite into one organization members of the medical profession specializing in industrial medicine and surgery for their mutual advancement in the practice of their profession.

The first annual meeting was held in Detroit at Hotel Cadillac on June 12, 1916, during the week of the meeting of the American Medical Association. The Association is now five years old and has a membership of approximately five hundred members from industries in all parts of the country. The association has become an established thing and from now on its growth should be both rapid and substantial. It is perhaps fitting to quote a telegram sent by Dr. H. E. Mock to the officers of the Association during the week of the Boston meeting:

Regret exceedingly illness prevents my participation in annual meeting of our grand Association. Disappointment is keen. Dreams and ideals advanced first meeting Detroit five years ago have now become realities. Nation awake to industrial waste in human life. The next five years hold greater possibilities than every before. Greetings to all.

With this message as a stimulus can not this Association during the coming year increase its membership twofold? It is conservatively estimated that there are in the United

States somewhere near two thousand eligible physicians, giving either part or whole time to the industries of the nation, that workers may be kept fit for their tasks. The Secretary cannot extend the membership; nor can a membership committee accomplish it. It devolves upon the entire membership to bring such a result about. Every member can surely secure one or two additional members. The dues are not excessive and in return a member secures a subscription to the *NATION'S HEALTH*, our official journal. It is hoped that in addition other services can be made possible and that in the end a good five dollars worth will be forthcoming. Added numbers to our membership will strengthen our position greatly and assist us materially in advancing the cause of industrial medicine.

It is with reluctance that the Secretary announces the resignation from the Association of Dr. Charles A. Lauffer, former medical director of the Westinghouse Electric and Manufacturing Company. Dr. Lauffer is leaving the field of industrial medicine. He does so with keen regrets but for good and sufficient reasons. Dr. Lauffer has been most active in the field of industrial medicine, contributing numerous papers at various meetings and has been regarded among our first leaders in the field.

The Secretary's page will welcome at all times notes of interest from the membership which should be passed on through this medium. We want to make this page a live one in every respect. It is only possible by co-operation.

# INSTITUTIONAL HEALTH

*The Health Problems of Schools and Colleges, Hotels, Summer Camps, Children's Homes and Homes for Dependents*

## Physical Development of Midshipmen

Physical Defect is Regarded as a Sign of Weakness to be Overcome by Definite Effort.

BY EVERETT B. TAYLOR, LIEUTENANT, MEDICAL CORPS, UNITED STATES NAVY, ANNAPOLIS, MD.

THE essential difference between the Naval Academy and other institutions of this country lies in the fact that it prepares its men directly for positions as officers in the United States Navy. It requires for entrance a thorough physical as well as mental examination based on a standard selected minimum average for age. After the applicant has passed this examination, his condition speaks for itself.

It becomes the duty of those who control and direct the institution to employ every means in their power to train and develop these young men, in order that they may be better fitted to carry out their important life mission. Executive officers attached to the United States Naval Academy are selected from those whose abilities are of that character that qualify them for this duty. Medical officers are also assigned, and their activities are synchronized with the executive department. Skilled instructors are chosen from both service and civilian life for didactic work. All of these are aided and augmented by the work of physical instructors and trainers whose duty it is to build up and maintain at its highest rate of efficiency the condition of the midshipmen. As in any other enterprise, it is only through the synergistic action of those concerned that the best and the desired results are obtained.

As this article is dedicated to the physical side of the midshipmen's life, it will be necessary in great measure to lose sight of the executive standpoint, and look at it more from the angle of the medical man, who is the one concerned with sickness and

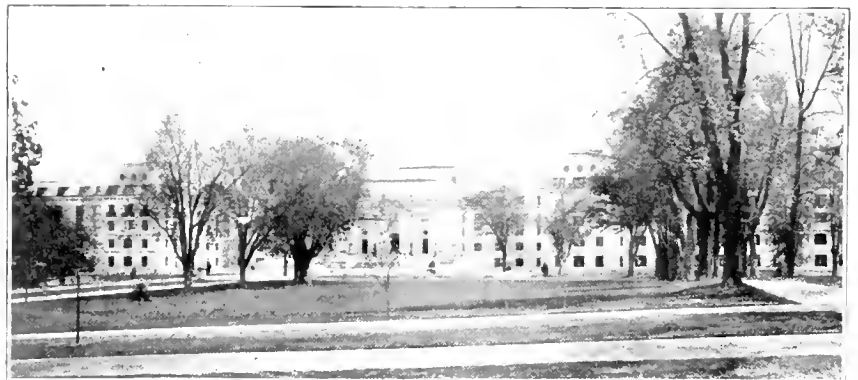
health, and largely with the physical condition of the midshipmen. The administrative and medical heads work together, so that each has cognizance of the other, and what is done is through recommendations and action with full consideration of all concerned in order that the best results may be obtained. The medical officers come in contact with the midshipmen in all their activities, and are so disposed as to cover every field.

As has been said, the first important duty in connection with the young men is to determine the fitness of the applicant for entrance. Each applicant must pass a prescribed physical examination, and when found qualified, being robust and of good constitution, he formally enters the Academy. Quoting from the regulations governing the admission of candidates to the Naval Academy:

Candidates are required to be of good moral character, physically sound, well formed, and of robust constitution. Any one of the following conditions will be sufficient to

cause the rejection of the candidate, viz:

- (a) Feeble constitution, inherited or acquired.
- (b) Retarded development.
- (c) Impaired general health.
- (d) Decided cachexia, diathesis, or predisposition; anemia, from malaria or from intestinal parasites, as hookworm.
- (e) Any disease, deformity, or result of injury that would impair efficiency; such as, (ea) Weak or disordered intellect; (eb) Cutaneous or communicable disease; (ec) Unnatural curvature of the spine, torticollis, or other deformity; (ed) Inefficiency of either of the extremities or large articulations from any cause; (ef) Epilepsy or other convulsions within five years.
- (f) Impaired vision, disease of the organs of vision, imperfect color sense; visual acuteness must be normal, i.e., 20/20 for each eye without the aid of glasses. There should be no deviation from this standard.
- (g) Impaired hearing or disease of either ear. The organs of hearing, both conductive apparatus (outer and middle ear) and the percipient apparatus (internal ear), must be free from disease. In testing the hearing



Entrance to Rotunda, Bancroft Hall, United States Naval Academy.



The Chapel, United States Naval Academy, Annapolis, Md.

of the candidate, the voice, the ticking of a watch, and, if practicable, Politzer's acoumeter shall be employed.

The voice is a more reliable method of determining the acuteness of hearing than the ticking of an ordinary watch, as it allows for variations in hearing, with the modifications produced by changes in pitch and tone. Hearing in each ear must be normally acute to the spoken and whispered voice. In examining the acuteness of hearing with the voice, one ear of the candidate should be closed while the other ear is being examined, and his eyes should be covered to prevent lip reading. The ticking of an ordinary watch should be heard a distance of 40 inches.

(h) Chronic nasal catarrh, ozena, polypi, or great enlargement of the tonsils.

(i) Impediment of speech to such an extent as to impair efficiency in the performance of duty.

(k) Disease of heart or lungs or decided indications of liability to cardiac or pulmonary affections.

(l) Hernia, complete or incomplete, undescended testis.

(m) Varicocele, sarcocele, hydrocele, stricture, fistula, hemorrhoids, or varicose veins of the lower limbs.

(n) Phimosis, and diseases of the genito-urinary organs.

(o) Ingrowing nails, bunions, cross or hammer toes, flat feet, or other deformity of feet.

(p) Loss of many teeth, or teeth generally unsound. Marked overbite, or lack of occlusion of jaws. There should be at least eight opposing molars, two on each side in each jaw. All defective teeth should have permanent fillings. Much time can be saved by previous attention to this requirement.

Attention will also be paid to the stature of the candidate, and no one manifestly under size for his age will be received at the Academy. The height of the candidates for admission shall not be less than 5 feet 2 inches between the ages of 16 and 18 years, and not less than 5 feet 4 inches between the ages of 18 and 20 years; and the minimum weight at 16 years of age shall be 111 pounds, with an increase of not less than three pounds for each additional year, or fraction of a year over one half. Any marked deviation in the height and weight relative to the age of the candidate will add materially to the consideration for rejection.

The decision of the medical board, especially ordered by the department for the examination of candidates for entrance to the Naval Academy, upon the physical qualifications for admission, will be final.

Medical officers are required to examine physically any candidate for the Naval Academy who may appear with a letter from a member of Congress so requesting. Special attention will be given to the following defects or disabilities: Flat feet, defective vision or hearing, heart or lung trouble, and disease of the kidneys. The candidate should be informed of the result of the examination and a copy of the report of examination shall be forwarded to the Member of Congress concerned and a duplicate report to the Bureau of Navigation. Each examination report shall show the name of the Senator or Representative requesting the examination.

Medical examiners should bear in mind that the primary object of this examination is to eliminate those who are obviously disqualified, rather than to give assurance to any candidates that they will subsequently pass the

official examination. For example, candidates who appear with rapid heart action, without organic lesion, shall be informed that unless such condition is temporary they will probably be rejected. Candidates having varicocele, hemorrhoids, varicose veins, or other minor surgical defects of remediable nature should be informed that they will probably be rejected unless these defects are corrected by operation.

In every border line case where the examiner himself is uncertain as to the outcome, candidates and Members of Congress should be clearly informed that the case is a doubtful one.

In the examination of candidates for admission as midshipmen into the Naval Academy, medical officers shall be governed substantially by the instructions contained in the Navy Regulations relating to the physical examination of recruits.

A high standard of physical excellence is essential in the cases of all candidates presenting themselves for admission to the Academy, and medical officers should always keep in view the fact that the future physical efficiency of officers of the Navy will depend largely upon the manner in which this important and exacting duty is performed by the board.

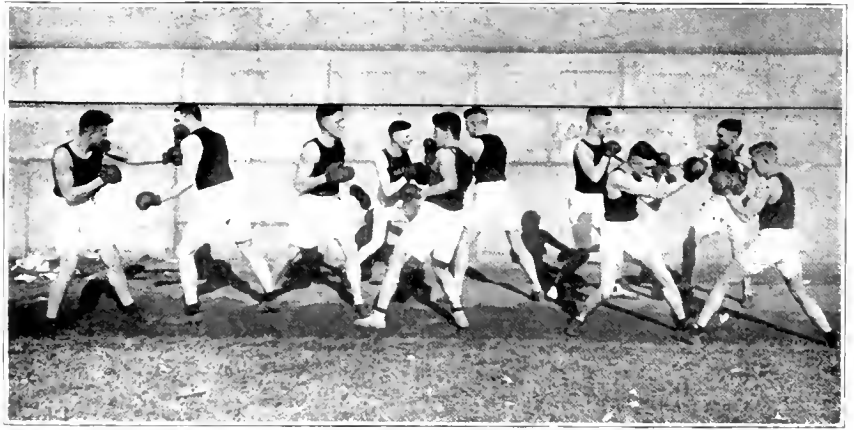
A careful urinary analysis shall be made in the case of every candidate undergoing examination. The urine shall be tested qualitatively and, if deemed necessary, quantitatively for sugar and albumin. Where albumin exists in appreciable quantity a microscopic examination shall be made. These examinations are carried out by a permanent medical board having as its head the Senior Medical Officer of the Station, who is director of all medical activities.

Immediately after entrance each midshipman of the entering class is given the "Strength Test," with the use of the Kellogg Universal Dynamometer. When the Dynamometers were first installed here they were standardized by running off tests of more than one thousand midshipmen, and averages taken and designated according to the various heights—sixty-two inches being the minimum allowance. In this manner a standard Anthropometric Chart has been prepared and is used for all midshipmen. It contains in appropriate columns, according to height, the strength units required of each of the forty-two muscle groups tested, and shows the standard of strength required for midshipmen of the first or graduating class. An allowance of one inch, not to fall below the requirements for sixty-two inches in height, is made for the second class; two inches for the third, and three inches for the fourth class. Failure to attain the required number of strength points in any one muscle group constitutes a defect. A chart is made out for each man, with the defects noted in the proper column.

and this chart kept on file in the office of the gymnasium medical officer. Whenever a man's chart shows defects he is regarded as weak, and a course of exercises and physical training is prescribed for him. These exercises are designed to correct the weak muscles. After this course of training he returns for another test of these defective groups.

When the defects are corrected he is no longer regarded as weak and his chart is held over until the following year. If at the end of the year, however, he is still found defective, he must utilize a part of his September leave in bringing up these deficiencies. On the back of each chart is tabulated the corrective exercises for the defective muscles. Each muscle group is named, and opposite is designated the particular exercises and the type of apparatus for use in correcting its weaknesses. Each machine or piece of apparatus is numbered according to its place in the gymnasium, and these numbers are also included on the back of the chart, so that carrying out the exercises becomes much easier and more systematic.

Several methods of maintaining these charts have been used, but the one finally accepted and in use now, is that of running the strength points down in its column, then checking these against the column of points required in each case, and finally noting the deficiencies in the column alongside the first. This shows at a glance how the man stands; and as the deficiencies are worked off the results are designated in succeeding columns. For example, E. W. A.'s chart shows nine defects—right and left grip, right and left Latissimus dorsi, right and left foot flexor, right and left thigh flexor, and right leg extensor—taken in the early part of September. After a course of corrective exercises he came back in October of the same year and upon being reexamined in these deficient groups, he attained the required standard. Another method may be represented by that of R. R. A., who was given the "Strength Test" upon entering in the summer, and showed more than fifty per cent deficiencies—allowance being made of three inches for the fourth class. For this method of checkage the chart is lined out in somewhat the same manner as a fever chart. His initial test shows his unit curve largely below the standard line for his height. In October after returning to the Academy from the summer practice cruise, his next test was taken and showed his deficiency curve less than thirty per cent below normal—in other



An open air boxing class in action. The fundamentals of all sports are taught and particular attention is given to a graded improvement each year.

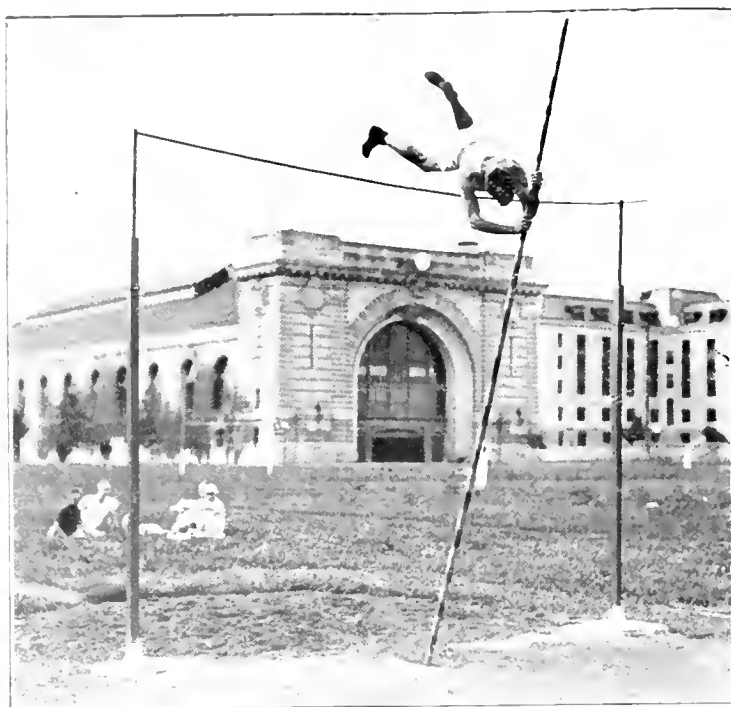
words shows a net improvement of approximately thirty per cent. His third test given in October of the following year shows less than five per cent deficiencies, or practically normal. In a very short additional time his chart is brought up to the standard.

There are numerous instances of this kind, some taking longer and some shorter periods of time to be brought to or above normal; but all pointing to the same consequence, i. e., all midshipmen with inferior muscular development or weakness, have shown decided improvement after taking the prescribed treatment in the form of corrective exercise and physical training; and practically all cases have been able to bring their deficiencies to normal. Of course it is not meant to infer that this is the final criterion of the midshipmen's physical qualifications, but it is of sufficient importance for the one in question to be held responsible for its finality. The charts furnish the desired and very important information as to the condition of the body as far as muscular strength and development is concerned, and furnishes an index of his condition throughout his stay at the Naval Academy and also as to the efficiency of the system used for his benefit.

Every educational institution recognizes the importance of having as large a list of athletic sports as possible for the benefit of its men, and every measure is taken for the promotion of their welfare along these lines. In the military school compulsory drills and formations are necessary, together with a certain amount of gymnasium and Swedish exercises. All institutions—the military more especially—have come to realize the advantage of having medical supervision in the realm of athletics. Men are examined here before going into

contests, and are checked up at various times, in order to avoid dangers and prevent detrimental conditions. No better example of the necessity of this can be cited than that of a midshipman on the wrestling team at this institution, who took part in a meet not long ago. This young man was wrestling at a certain weight, and was extremely desirous of training down to a weight considerably lower. To do this it would be necessary for him to reduce his weight fifteen pounds within the space of ten days. This he did by the process of weight reduction known to wrestlers and boxers. The outcome of his bout, however, was disastrous. He not only failed miserably to handle his opponent, but at the end of the bout he had to be assisted from the mat in an exhausted condition from which he recovered slowly, requiring careful nursing for several days.

This subject of overtraining cannot be emphasized too much. Suffice it to say that the man who overtrains takes his life in his hands. In college athletics there should be no effort made to train down more than five or six pounds with the idea of keeping the weight down. Even this should be done gradually, allowing plenty of time for accommodation of the various organs and parts of the body. Of course there are times when athletes lose considerable weight, especially at the beginning of a season—notably football. This however, is quickly regained, and the recovery serves as a gauge of his reactions. Many a bout has been lost to a professional boxer who has had to train down considerably in order to enter the ring at a specified weight. The result is a weakened condition. That being true, why should a much less experienced man risk his match and his life trying to reach a lower weight? There is no hesitancy in



Injuries resulting from track are mostly from falls or sprains.

saying that in the future at this institution measures will be taken to prevent midshipmen from "boiling down" their weight more than a certain amount. Overzealous trainers will be prohibited from carrying out this method of reduction.

Not long ago the president of one of the largest and foremost universities of this country asked how many men were engaged in athletics at this institution. Upon being informed that approximately eighteen hundred men participated in the various forms of sports last year, he was amazed, and expressed the earnest wish that as many of his own students could be interested in that way. During the past year about eighteen hundred of the two thousand enrolled at the Naval Academy took part in either authorized or class games. The following is a list of the more important sports indulged in:

Football	Boxing	Water Polo
Baseball	Wrestling	Lacrosse
Basketball	Gymnasium	Soccer
Track	Fencing	Crew
Tennis	Swimming	Racing

All of these with the exception of Soccer are represented by a Varsity team, and all with the exception of crew racing and fencing are contested by classes in addition. During the colder months when the indoor contests are at their height, the sport card is so full that it would be impossible for one to see all the events. Imagine such a condition as this: a basketball game in one building, immediately followed by boxing,

wrestling and gymnasium contests in another—all of the last three named being contested at the same time. Simultaneously, fencing and swimming contests are being carried on in still other parts of the same building. In the realm of Spring sports it frequently happens that lacrosse and baseball games are being held on one athletic field, a track meet on another, crew races on the water, and tennis matches on the courts.

It is agreed that physical culture in some form or other is necessary for the development of young people, making them stronger, healthier, and better morally. It is also conceded that these athletic contests develop a spirit of aggressiveness, self-reliance, courage and endurance, and cultivate a spirit of sportsmanship and ability to sustain hard knocks. There does not seem to be any reasonable doubt that men who have had athletic training in younger days would be the last to show the white feather in action. The spirit of do or die cultivated in athletic contests is of inestimable value as an asset for the men of our Navy. These would be the last to admit defeat, and would be the first in the face of disaster and hardship, pain and fatigue, to make a new and greater effort.

Some attention must be paid to the fact that many athletes suffer in later life for the strains they have put upon their systems while in the course of athletic training in their younger days. There is many a sad

figure seen walking into the doctor's office presenting the picture of one who has "gone bad" after leading a record-breaking career in college athletics. If the history is gone into carefully, it will be found that the majority of these cases are those who have led a very active athletic career while in school, and after leaving there have settled down into business life, making no effort to gradually change from a strenuous athletic existence to a quieter sedentary life. Consequently the hypertrophied heart becomes flabby, valves relax, leaks occur and a lack of accommodation manifests itself in an improperly supported circulation, giving us the above picture. This, however, has not proved the case with men who have gone out from the Naval Academy.

There are examples without number of officers of today's Navy, who have graduated from the Academy in years gone by, who are in as good physical condition as could be expected for their age and service. The secret of this lies in the fact that the Government requires that its officers and men keep physically fit at all times; and when they enter active service they do not settle down to a soft sedentary existence, but undertake measure regularly for the upkeep of their physical condition. As a check upon this, every officer is given a thorough physical examination once a year. During the year preceding this examination he is required to take daily exercise of at least one-half hour. Defects, then, would under this system be certain to crop out, and weaknesses would appear if present. All midshipmen are given an annual physical examination and those who fail to come up to the required standards, are recommended for rejection. In support of the above statements, a careful anthropometric study of officers of the Navy Post-Graduate School who had varying amounts of service, was made by Lieutenant S. B. Solhaug, Medical Corps, U. S. Navy. These officers he divided into two groups—first, those who were recent graduates of the Academy, and second, those who had five years active duty. The second group showed a greater percentage of deficiencies than the first, particularly in the dorsal, abdominal, and femoral groups of muscles. This furnishes convincing proof of the necessity of requiring officers and men to keep up their physical condition.

As to the harmful effects of athletics there is very little to be said. These are partly avoidable through



the aid of medical supervision, and have been brought down to a minimum at this institution. These conditions arise from excessive strain upon the heart and other organs, and may be avoided by eliminating the unfit, proper diet, training and exercise, and avoidance of overtraining. Sometimes unforeseen conditions result from indulging in violent exercise too soon after eating. With proper warning and training these may be eliminated entirely. The accidents that occur during contests and due directly to them, are almost entirely unavoidable, but can be minimized by the immediate removal of the contestant and application of proper treatment. No one should be allowed to remain in training too long, as a prolonged and vigorous course of training will produce injurious results. After a period of about four months the young athlete should be advised to break training for a time. It is a well known fact that even within this space of time the athlete may go "stale," and have to be removed from the training table until a sufficient improvement is brought about.

The injuries growing out of these athletic contests have been derived chiefly from football, lacrosse, and wrestling. They consist mostly of sprains, dislocations, fractures, lacerations and contusions—in order of frequency. During all contests at this institution, a doctor is to be found at the scene of activity with a kit for first-aid treatments, after which the injured are either sent to Sick Quarters or to the Naval Hospital, according to the severity of the case. Boxing and track contribute their quota of injuries, but no extremely serious accidents have occurred in the experience of the writer with the exception of one fatality resulting a few days after a boxing bout, due to secondary cerebral hemorrhage.

The gymnasium medical officer has adjoining his office a treatment room, called "Misery Hall," where there are numerous devices for baking, massage, and the application of heat, facilities for dressings, strappings and splints, and a high frequency machine with its modalities. The latter has been used with very gratifying results in the treatment of the contused muscles, especially those due to football. It has been found that these conditions yield more readily to the treatment by the D'Arsonval and Sinusoidal currents, combined with the preliminary symptomatic treatment in the beginning, than from any other.

As stated before there is a regular routine of compulsory exercises carried out, and each midshipman is required to qualify for each of the tests in each group as they are arranged. When he fails to qualify a red check is placed in the proper column against him, and carried there until he has made the grade. The entering class is given one hour of Swedish drill a day during the summer, and each member is taught to lead and command. During the academic year each battalion of the fourth class is given a week of gymnasium drill—consisting of five one-hour periods—every month; and twenty minutes of each of these periods are devoted to Swedish exercises. The third class is divided into two sections, each of which has one hour of gymnasium drill a week, twenty minutes of which is Swedish. Men out of any class who fail to qualify in any of the tests relative to these drills and exercises, as well as those who are deficient in the Dynamometer tests, are placed in a special gymnasium squad, and given one hour of Swedish movements each week in addition. Whenever it is found that a midshipman of the first or graduating class has failed to make the average for as many as five muscle groups, he is considered as not qualified physically.

There are a number of gymnasium tests which each midshipman is required to pass before he is considered up to the standard. These tests are graded as C, B, and A—the C test being required of all fourth classmen, B of all third classmen and A of all second classmen. These number four-

teen in all and run as follows:

(1) Bar vault, height of shoulders, double take-off without run.

(2) Standing broad jump, distance according to grade.

(3) Running high jump, height according to grade.

(4) Dips on parallel bars, number of times according to grade, without a swing.

(5) Chins on horizontal bars, number of times according to grade, using any grip.

(6) Rope climbing, climbing hand over hand.

(7) Making fast on single rope, for all classes.

(8) Short horse exercises, strides and vaults according to grades.

(9) Throwing medicine ball, distances graded, right and left hand.

(10) Mounting shelf without assistance, using any method.

(11) Running 440 yards, outdoor and indoor.

(12) Horizontal bar exercises.

(13) Wall bar exercises.

(14) Tumbling, forward and backward rolls, and cartwheels.

Each midshipman is required to know how to swim, and all must pass certain tests in this division. The first test is that of keeping above water for five minutes, demonstrating breast, side and back strokes. The next is that of swimming 120 yards in three minutes and thirty seconds, using the breast, side and back strokes, each for forty yards. Included in this test is diving into the water and raising an object from the bottom of the pool. The last test is that of swimming 160 yards in four minutes and thirty seconds, using the



Training for the wrestling team. Emphasis is placed on wrestling and boxing as a means of strengthening the body.

breast, side, back and either the Trudgeon or Crawl strokes, each for forty yards. Included in this test is approaching a drowning person and swimming with him twenty yards to a place of safety, and then demonstrating ability to properly apply methods of resuscitating the apparently drowned.

Besides these physical requirements there are tests in wrestling, boxing and sports in general. There are other tests given in command and leadership, small sword, saber and cane, and setting up exercises. Last but by no means least, comes the question of posture, or "brace." Posture is one of the most important considerations for any military man, and is a subject that is gone into very thoroughly. A treatise has been prepared and incorporated into booklet form for the use and instruction of midshipmen, and each must have this in his possession. It contains in condensed form the theory and practice of posture, both at attention and marching; and at the end there is a chart of errors showing the more common faults of posture and how they may be obviated. Also the booklet contains a compact list of setting-up exercises, which may be easily made use of as a daily routine.

As an integral part of the midshipman's course of instruction should be



In playing soccer there is unlimited opportunity for agility and grace.

mentioned the course in hygiene. As enacted by law the graduating class receives fourteen lectures during a term besides periods of extra and individual instruction in the gymnasium. This course includes personal and general hygiene, anatomy and physiology, preventable diseases—especially venereal, and the effects of alcohol and other narcotics. This

class is examined at the end of the term and held accountable for a passing mark. Regular lectures on personal and general hygiene, including venereal and other preventable diseases, are given to the entering class. Thus we see that no midshipmen goes out of the Academy without a knowledge of physiology and hygiene, and the dangers of venereal diseases. The course in hygiene is enhanced by the use of lantern slides and moving pictures. The lectures are illustrated as far as possible. For two years a special exhibit on Social Hygiene, under the auspices of the Sixth Division of the Bureau of Navigation, has been held for the benefit of all midshipmen, as well as for the entire personnel.

For handling the sick, a dispensary service and Sick Quarters are maintained in the main dormitory building of the midshipmen. This department consists of a large and well stocked dispensary, consulting room, dressing rooms, laboratory, sterilizing plant, dental offices, and a complete eye, ear, nose and throat outfit, including a dark room. A corps of doctors, dentists, an eye specialist, and a number of hospital corpsmen are on duty there. Ample quarters for bed patients are maintained in Sick Quarters adjoining the dispensary and on the sunny side of the building. These wards consist of from four to ten beds each. The minor diseases are treated here, while the more serious and prolonged ones are transferred to the Naval Hospital at Annapolis. As an example of the work done by the medical department, the statistics shown in Table I indicate the work of the past three years.

TABLE I.—TABULATION SHOWING THREE YEARS MEDICAL SERVICE.

	1918	1919	1920
Number of admissions, all cases.....	4,134	2,384	2,568
Number of readmissions, all cases.....	228	142	141
Admissions and readmissions for diseases.....	4,155	2,220	2,284
Admissions and readmissions for injuries.....	207	306	232
Total sick days.....	8,153	3,369	5,495
Total sick days for diseases.....	7,800	2,814	5,110
Total sick days for injuries.....	353	525	385
Average number of admissions per day.....	22.3	9.5	7.09
Average number of admissions for diseases.....	21.4	8.06	6.29
Average number of admissions for injuries.....	0.9	1.44	0.8
Percentage of sick.....	0.7	0.35	0.66
Average complement.....	3,110.2	2,660.6	2,290.6
Number of cases transferred to Hospital.....	2,912	1,631	1,220
Number transferred for injuries.....	135	190	115
Disease causing greatest damage, influenza			Bronchitis
Sick days.....	4,076	303	576
Number of admissions and readmissions.....	1,984	167	339
Gastro-intestinal diseases, midshipmen only			
Admissions and readmissions.....	202	38	117
Number of sick days.....	209	54	176
Football, midshipmen only			
Admissions and readmissions.....	15	75	78
Number of sick days.....	41	151	163
Number of visits of midshipmen to Sick Quarters.....	59,244	21,037	31,240
Damage in sick days.....	5,711	1,903	3,750
Damage in excused days.....	17,112	4,606	6,894
Average number of visits per day.....	137.6	65.8	85.35
Average number of midshipmen.....	1,772	2,008	2,058
Number of men invalided from service.....	51	32	12
Number of men died.....	2	3	5
Number of vaccinations.....	1,421	720	1,115
Number of anti-typhoid inoculations.....	1,694	745	1,065
Number of urine examinations.....	213	3,546	4,395
Number of blood examinations.....	2	2	61
Number of feces examinations.....	9	152	158
Number of smears examined.....	28	10	61
Number of sputum examinations.....	15	45	189
Number of milk examinations.....	3	..	32
Annual physical examinations—midshipmen.....	1,461	2,108	1,840
Annual physical examinations candidates.....	1,035	774	608
Preliminary examinations candidates.....	174	63	53
Myopia cases.....	11	58	187
Hypermetropia cases.....	85	69	95
Astigmatism cases.....	102	56	34
Other causes.....	21	5	3
Dental patients treated.....	..	2,218	1,770
Dental treatments given.....	..	3,724	5,450

# One Way of Building Up the Nation's Manhood

## New Tastes, More Wholesome Interests, Resiliency in Physical Vigor, Result from Outdoor Activities

BY GEORGE J. FISHER, M.D., DEPUTY CHIEF SCOUT EXECUTIVE, BOY SCOUTS OF AMERICA, NEW YORK CITY

**WE** GLORY in the fact in America that we are rapidly decreasing the death rate. It is cause for gratification. Our large cities, like New York City, have made great strides in saving life and in warding off death to a later date. The fight with the grim specter is a winning battle. Young children have been the largest beneficiaries. Let us thank God for that. This is our first duty, and we are performing it well.

In the next place we have conquered many, and hope to conquer still more of the great filth diseases. Typhus bothers us now practically not at all. Typhoid, a terrible death scourge just two decades ago, is rapidly becoming rare. We have found the clue that gives us a grip on these grim destroyers. Then too, such pestilences as smallpox and, more recently, diphtheria, have gone their way. We have found the magic for giving the individual resisting power so that he can grin and defy these former victors over the destinies of man.

Now all this is heartening, encouraging, inspiring.

If only we can, with greater success, find a way of successfully combating the great respiratory diseases, for staying off the great epidemics of influenza, of eliminating pneumonia, it would prove a marvelous leap forward in human advancement.

### Respiration Suffers

The breathing apparatus seems to suffer most in modern times. Indoor life is exacting a terrible penalty. Possibly the respiratory apparatus is most decadent. Modern civilization lays its hands heaviest upon these organs. Is it because they are too quiescent? Is this the penalty for sitting still too much? Is it because they lack the tonic of the out of doors?

Then too the organic diseases seem to still be rampant, heart, liver, kidneys, the digestive organs. Boards of health can not prevail with these. They are not due to communicable diseases. They are the result of the individual's own life and habits. They may be considered primarily the result of two things, namely, under-muscular exercise and over-eating.



One of the most fundamental problems of the present day is how to create and maintain in a city bred and city cramped populace the love and sufficient opportunity for rejuvenating life in the open. This scene was an inspiration to the Boy Scouts of New York City.

They are the penalties of a sedentary life. They are constantly referred to as the diseases of degeneration.

Now what is the remedy? The answer is that man must find a way of adapting himself to sedentary pursuits. He must retain those forms

of physical activity that are basal to health. There must be a happy balance between work and play. He must observe a proper rhythm between indoors and outdoors, between rest and work, between activity and inactivity.

The great progress which has char-



Results with the Boy Scouts in New York give further proof that the genial influence of sunshine and fresh air quickens the vital processes of respiration and circulation. The psychological condition is improved as well, and the body acquires a greater working capacity.



is now well established that the system of instruction in the  
the organism of the child, and the child's mind is the only  
other forms of instruction, and the child's mind is the only  
the child's mind is the only



The stimulus of beauty is a beneficent thing, stilling discordant notes and bringing into ordered rhythm the disintegrating influences of congested city life.

acterized the growth in recreational activities is encouraging. There is increasing participation in sports and games. The summer vacation is becoming a national habit. Daylight Saving in the cities has prolonged the play period in the day's order.

But, here is a strange thing. With all our gymnasiums—and we should have more of them; with all our college sports—and I would not curtail them; with all our baseball and team games, we do not seem to be making headway so far as reducing the death rate over forty is concerned. What is the reason? My opinion is that our forms of physical recreation do not carry through far enough. The more strenuous games like baseball, football, and tennis, are given up at a time when men need physical stimulation. Golf is an exception.

#### For Men of Forty

Now the great need is for interest and participation in those forms of exercise which do carry through, which a man can carry on right through life, and which keep him full of life and enthusiasm.

And right here is where I feel the Boy Scout Movement is going to prove, and is proving, a great beneficent national service. This program is an out-of-doors program. It seeks to lure the boys and their leaders into the open; to acquaint them with the woods; to teach them the charms and attractions of the forests; to sleep in the open, blink at the stars, throw bridges across streams, signal from the mountain tops, know the trees, become intimately acquainted with the birds, track animals, photograph them in their natural haunts, hike across the hills, row and canoe and climb and hike.

What a transformation results from

a month's experience in the woods. Think of what would happen if every person in America practised this kind of a program, not only for a month

in the summer, but during the entire year through such activities as week-end camps, over-night hikes, or daily hikes. This is the heart of the Scout Program. It is giving men and boys a taste for the woods. It is developing habits of living which endure, which carry through, which become more permanent than any program heretofore devised. It lacks the extreme specialization which characterizes our athletics. It does not have the severe muscular and heart strain which is typical of some of our major sports. It consists of a large number of smaller efforts, carried over a larger period of time and in the open air.

Given a few million boys in this attractive program, and undoubtedly there will be a marked improvement in the health of the Nation. It is the kind of a program which a father can enjoy with his son, which an older man can participate in with the youth. It is America's best recreative program.

## Deficiency Diseases

AMERICAN scientists are in the foreground in the impetus given to our understanding of dietetics and food values, and in the use of the diet in the prevention and cure of disease, according to Dr. Alfred C. Reed in the July *Scientific Monthly*. Old dicta in regard to diet have been reversed and our appreciation of dietary requirements for health has broadened from the mere consideration of energy requirements to include a proper number of calories of food, the suitable distribution of this total caloric requirement between carbohydrate, fat, and protein, a proper supply of mineral salts, a sufficient water intake as well as the accessory food factors.

Recent carefully directed investigation has thrown much light on the three groups of vitamins. It is now possible by special chemical procedures to concentrate and isolate vitamins of these three groups and definitely to associate dietary deficiencies with given disorders.

McCarrison's recent work caused him to conclude that in the treatment of disease it should be regarded as highly important to emphasize "the significance in practice of a study of the dietary history of the case, believing that bacterial agencies are often but weeds which flourish in soil made ready for them by dietary defects, and also, that in the fuller comprehension of the science of dietetics

we shall understand more perfectly the beginning of disease and its therapy."

Nutritional dangers lurk in the increasing use of food substitutes; in excessive utilization of meats and sweets, and subnormal use of vegetables, fruit, and dairy products. Racial, local, and individual aberrations of diet are vastly important from the angle of public health, from which it may be inferred that the science of dietetics promises to become ever more important in the treatment and prevention of disease, and as essential from the sanitary and public health point of view as for the individual man or woman.

Dr. Reed's article discusses at length the clinical pictures of scurvy, beriberi, pellagra, and such other deficiency diseases as xerophthalmia, war edema, war dropsy, or famine edema—well called by H. Gideon Wells "nutritional dropsy." The comparative pathology is traced, ranging from palsy, through dropsy, cardiac weakness and degeneration, nerve degenerations, spongy gums, hemorrhages, bone lesions, to the lesions at bone ends which are so notable a feature of rickets and often scurvy.

Warning is issued against commercial preparations of vitamins which are beginning to appear on the market, as under ordinary conditions of life natural foods should supply any present deficiency.



# Vocational Training vs. Occupational Therapy

## Vocational Training Occupies the Minds of the Tuberculous on an Ever Advancing Plane

BY PHILIP KING BROWN, M.D., SAN FRANCISCO, CALIF.

TEN years experience with ergotherapy at Arequipa, a sanatorium for tuberculous wage-earning women, carried on as it has been under strict medical supervision and limited to certain hours of work a day, has developed the following principles:

(1) An occupation is unquestionably desirable for every patient, even when confined to bed, who is not in any way toxic and who does not show any bad effects from the occupation.

(2) The character of each line of work must be sufficiently engrossing to hold the patient's interest and should be carried on in the case of bed patients without undue use of arms and should produce no excitement such as might come from competition, in finishing work. Standard of quality, not speed, must govern the whole effort.

(3) Experience has taught us to put aside loom work. Even knitting and crocheting of the coarser kind is rather dangerous. Patients who can carry on this kind of work safely should make up a group by themselves because they belong to the class that are very nearly ready to be discharged.

(4) White needle work done out of doors has the disadvantage in being a strain upon the eyes unless the patient is protected by a green or black sunshade or umbrella and sometimes even an eyeshade. The same disadvantage holds about reading outdoors if the light is strong. Embroidery work, limited to certain hours, has never seemed to be a disadvantage to any patient who could work at all.

(5) The making of raffia baskets offers an occupation, but is rather a useless task even if the baskets are artistic productions and command a fancy price, for they are apt to give patients a wrong idea about values. Work of this kind, and with it we class most bead work, is no work for men and if it commands a sentimental value it has more a demoralizing than a helpful influence.

(6) Bookbinding, except of the coarser kind, is too heavy a work, both the handling of the press and the binding of the folded leaves has proved to be too much for the patients.

(7) In the same way even a pro-



Arequipa Sanatorium, Manor, Calif., where ergotherapy for tuberculous wage-earning women has been carried on for years under strict medical supervision.

fessional woodcarver with tuberculosis demonstrated to us that woodcarving was too heavy a kind of work. The making of string hammocks is open to the same objection that holds with knitting and loom work.

(8) The mending of the wicker chairs and the making of baskets with wet wicker, particularly the smaller baskets which can be hand painted and sold to florists, are excellent work for patients who are

without fever and who do not tire easily. The variety of form and color offers stimulating interest, and the market for such things makes the work profitable.

(9) Pottery, which was carried on with great success after years of struggle, is the best single occupation that we have found, because the heavy work is merely the mixing of the clay and can be done by hired labor, as can be the pressing of tiles.



The mending of wicker chairs and the making of baskets of wet wicker stimulates interest and a ready market makes the work profitable.



# THE NATION'S HEALTH

(Continuing MODERN MEDICINE)

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## Views of the President on Public Health

An Interview with Brigadier  
General Charles E. Sawyer

BY JAMES ALNER, NEW YORK CITY

**S**HORTLY after his inauguration, President Warren G. Harding asked his personal physician, Dr. Charles E. Sawyer, to come to Washington and make a survey of the health and welfare activities of the Government with a view to their coordination. Dr. Sawyer was commissioned as a Brigadier General in the Medical Reserve Corps of the Army and given an office in the State, War, and Navy Building. Since he acts as spokesman for the President concerning matters pertaining to public health, THE NATION'S HEALTH takes this opportunity of presenting his views to its readers. Before giving them in detail, it might be worth while briefly to outline the events which have paved the way for the interest of the administration in public health.

### The Historical Background

Many of our chief executives have believed with the great statesman, Disraeli, who is so often quoted as saying, that "public health is the foundation upon which reposes the happiness of the people and the strength of the Nation" and that the "care of the public health is the first duty of the statesman." President Arthur, for instance, asserted that "the health of the people is of supreme importance." Theodore Roosevelt, himself the personification of vigorous manliness, stated that "our national health is physically our



Charles E. Sawyer, Brigadier General, M.R.C., United States Army.

greatest asset." He also declared: "To prevent any possible deterioration of the American stock should be a national ambition." It was President Roosevelt who appointed the National Conservation Commission, to which Professor Irving Fisher made his notable report on "National Vitality" in 1908. During the presidency of Mr. Taft, strenuous attempts were made in 1910 to get a Federal Department of Health. The idea of such a department had been indorsed by the President in messages

to Congress, but the efforts were not successful. Few persons know that in 1917 a confidential advisor of President Wilson asked a number of health experts to prepare a program for a national health administration.

These early endeavors did not bear fruit, at least they did not result in the goal essayed—a national department of health. To the present administration, therefore, seems to have fallen the opportunity to advance the cause of public health in this country to a position never previously attained. The Republican platform itself pledged the party to the solution of social problems. It advocated a thorough system of physical education for all children up to the age of nineteen, including adequate health supervision and instruction as a remedy for conditions revealed by the draft. One plank referred to the public health facilities of the Government as follows: "The public health activities of the Federal Government are scattered through numerous departments and bureaus, resulting in inefficiency, duplication, and extravagance. We advocate a greater centralization of the Federal functions, and in addition urge the better coordination of the work of the federal, state, and local health agencies."

That the President had these matters in mind is shown by an excerpt from his first message to the Sixty-Seventh Congress:

In the realms of education, public

health, sanitation, conditions of workers in industry, child welfare, proper amusement and recreation, the elimination of social vice, and many other subjects the Government has already undertaken a considerable range of activities. I assume that the maternity bill, already strongly approved, will be enacted promptly, thus adding to our manifestation of human interest. But these undertakings have been scattered through many departments and bureaus without coordination and with much overlapping of functions which fritters energies and magnifies cost. Many subjects of the greatest importance are handled by bureaus within Government departments which logically have no apparent relation to them. Other subjects which might well have the earnest consideration of Federal authorities have been neglected or inadequately provided for. To bring these various activities together in a single department, where the whole field could be surveyed, and where their interrelationships could be properly appraised, would make for increased effectiveness, economy, and intelligence of direction. In creating such a department it should be made plain that there is no purpose to invade the field which the states have occupied.

### The Preliminary Survey

It was in order to get authoritative information on the existing state of affairs that the President requested General Sawyer to make his survey. In doing this work, the General was fortunate in having much able assistance. The United States Bureau of Efficiency, for instance, the office of which is located only a short distance from that of the General, was able to supply much valuable data. Government bureaus, realizing that the result of the survey would accrue to their interest, cooperated from the first. Certain national voluntary agencies rendered much useful assistance, perhaps none any more than the National Health Council. This organization placed the facilities of its Washington office at the disposal of General Sawyer in gathering information and has been of considerable assistance along these lines.

General Sawyer occupies a large room in the northeastern corner of the State, War, and Navy Building. He is an intensely busy man. It seems as if everybody who has any kind of ideas on the subject of welfare feels the necessity of visiting the General and expressing them. To all, however, he listens attentively and politely. From many he has derived much benefit. In his anteroom one will see social workers, physicians, members of Congress, representatives of labor interests, educators, newspaper men, writers (he has been written up so much, he doesn't try to keep track of the articles himself), and

various other types of American citizens. He likes to describe himself as a country doctor. Before he came to Washington he conducted a sanatorium in Ohio, the management of which he has now turned over to his son. While he was not well known nationally, he was by no means a provincial figure. He has served as president of the American Institute of Homoeopathy and is considered among the leading physicians in his home state.

When General Sawyer grants an interview, he is cordial, but does not hand out a cigar, as Mr. Coolidge used to do when Governor of Massachusetts. He has a formal sort of way of delivering a speech to the interviewer as sole listener. It is a kind of speaking-for-publication manner. General Sawyer is an interesting talker; there is no doubt of his sincerity.

The President, he declares, is whole-souled and generous. He has at heart the desire to increase the public welfare and he wants to make this country the strongest nation in the world, both physically and mentally. He regards public health as the Nation's greatest asset. He desires to have all our official welfare agencies brought together, so as to create the most efficiency. In this subject of public welfare we believe that there are three factors: education, public health, and social service. These three matters are being studied as the foundation upon which to build the superstructure of public welfare. If this survey proves that it is worth while, we shall have a new Federal department under which these affairs may be carried on.

### Health Objectives Formulated

As a matter of fact, Senator Kenyon introduced a bill for a Department of Social Welfare in the Senate on April 12, 1921. On April 21 General Sawyer appeared before the Senate Committee on Education and Labor, to which this Bill had been referred, and outlined his plans for a department of welfare. As a consequence of his testimony, Senator Kenyon introduced in the Senate on May 5 a new Bill for a Department of Public Welfare. Representative Fess introduced a similar bill in the House on the same day. These bills were drafted after conferences with General Sawyer and embody his ideas.

The Fess-Kenyon Bill (S. 1607, H. R. 5837) proposes a new department under a cabinet officer. There would be four assistant secretaries, each at a salary of five thousand dollars a year. Each assistant secretary would be in charge of one of the following divisions: (1) Education, (2) public health, (3) social service, and (4)

veteran service. The Bill would abolish the following existing offices: Director, Bureau of War Risk Insurance; Surgeon General, Public Health Service; Commissioner of Education; Chief, Assistant Chief, and Private Secretary to the Chief, Children's Bureau; Federal Board for Vocational Education; and the Board of Managers, National Home for Disabled Volunteer Soldiers.

The following bureaus would be transferred to the new department: Children's Bureau (Labor); Bureau of War Risk Insurance (Treasury); Public Health Service (Treasury); Office of Education (Interior); Bureau of Pensions (Interior); Freedmen's Hospital; National Home for Disabled Volunteer Soldiers; United States Employee's Compensation Commission; Columbia Institution for the Deaf (Interior); Howard University (Interior); and St. Elizabeth's Hospital (Interior).

The Bill also provided that the President should have the power to transfer other bureaus at his discretion.

Hearings were held on this Bill on May 11, 12, 13, 18, and 20 before joint committees of the Senate and House. General Sawyer appeared as the first witness. He explained the features of the Bill and answered questions of the Committee. In conclusion he stated that he had no aspirations to direct the Department of Public Welfare and was working only for the best interests of the Country. His evident sincerity impressed the members of the Committee and one of them made a remark which for some reason does not appear in the printed report of the hearings. It was to the effect that General Sawyer could head the Department and that this particular committee member intended to vote to confirm him if he got the chance. This remark seemed to meet with general satisfaction. Senator Kenyon observed, however, that if the General declined, possibly some other citizen from Ohio might be prevailed upon to accept.

### A Division of Interests

The principal objections to the Bill came from the educational group. They insisted that they could be satisfied with nothing but a cabinet officer at the head of an independent department of education. An entire day of the hearings was devoted to their arguments. Later, General Sawyer invited a number of these prominent educators and friends of education to his office and attempted to

convince them of the soundness and desirability of placing education under the Department of Welfare. The educators remained firm in their opposition, however.

Among the prominent health people who spoke on this bill were Surgeon General Cumming of the Public Health Service, who indorsed it with the exception of the clause abolishing the office of Surgeon General; Dr. William H. Welch of Johns Hopkins; and Dr. Edward Martin, state health commissioner of Pennsylvania. A number of speakers brought out the desirability of having a separate department of public health in the Federal Government, but they expressed the opinion that public health could well fit into this scheme of public welfare. The usual crowd of anti-medical freedom cranks opposed the measure.

At the time of writing this article (August 10) the Bill has not yet been reported from the Committees, nor has any action been taken upon it. General Sawyer states that the President is not yet ready to have the Bill acted upon. A Congressional committee on reorganization of the Federal Departments, known as the Smoot-Reavis Committee, is at present working on a scheme of reorganization. The Chairman of this Committee, who is also the representative of the President on it, has stated that he is to include in his recommendations a scheme for a department of welfare. He is working in close harmony with General Sawyer on this matter. It is probable that there will have to be some modification in the Bill. In August, Congress passed the Sweet Bill, which creates an independent Veteran's Bureau, directly responsible to the President. This measure provides for the consolidation of the Bureau of War Risk Insurance, that part of the Public Health Service dealing with the hospitalization, medical care and treatment of ex-service men, and the Federal Board for Vocational Education into one Bureau. Thus, the Veterans' Division in the welfare bill seems to have been taken care of in this Sweet Bill.

Another important health measure in which the President is greatly interested and wishes to see pass, is the Sheppard-Towner Bill for the Protection of Maternity and Infancy. This bill was introduced in the last session of Congress, the Sixty-Sixth, and passed the Senate and was favorably reported in the House. It was reintroduced in the present session and passed the Senate on July 22 by a vote of 63 to 7. The House has not

yet (August 10) acted upon it, but the Committee on Interstate and Foreign Commerce, to which the bill was referred, held hearings on it from July 12 to 23. One of the principal witnesses was General Sawyer, who appeared on invitation of Congressman Winslow, the chairman of the Committee. He told how the bill would fit into the scheme of the welfare department and indorsed its administration by the Children's Bureau.

### Aid Local Enterprise

While the provisions of this Bill are well known to most health workers, a brief review may be in order. The bill provides for a method of cooperation between the Federal Government and the States for the protection of maternity and infancy. An appropriation of ten thousand dollars is made for each state which can qualify under the terms of the Act, and then a further appropriation is made, based on the proportion of population of the state to the total of the United States. This latter appropriation must be equaled by the state. The money is to be used for instruction in the hygiene of maternity and infancy by means of public health nurses, consultation centers, and other suitable methods. The administration of the act is vested in the United States Children's Bureau of the Department of Labor. The Chief of that Bureau is named as executive officer, with an advisory board consisting of the Surgeon General of the Public Health Service, the Commissioner of Education and the Secretary of Agriculture.

The President's solicitude for the public health is further shown by his action regarding the pellagra situation in the south. Relying on reports of the Public Health Service that one hundred thousand cases of pellagra were indicated in the cotton belt this year, on July 25 he wrote to the Surgeon General of the Public Health Service and to Dr. Livingston Farrand, head of the American Red Cross, asking that these two bodies cooperate in a survey of actual conditions with a view to making an attempt to remedy them. In his letter to Dr. Farrand the President wrote:

Recent reports of a distressing condition among the rural population in a large section of the Cotton Belt are confirmed by a public statement from the Public Health Service. They indicate that, due to the depressed cotton market, many thousands of people are unable to sell their one product for money wherewith to obtain a necessary variety of wholesome food, and that there is grave threat of an epidemic of pellagra.

It must bring a shock to the American people to realize that a great section of their own country, which they are wont to think of as immune from such experiences, is actually menaced with famine and plague. For that is what it would be called if it should befall in any other country, and we may as well give it its right name.

It is, of course, a consequence of the economic disorganization following the war, and it demands instant and vigorous attention. Our people, so long and so often moved by charitableness toward the unfortunates of other lands, will never permit such an affliction here at home.

The publication of these letters brought forth indignant denials from officials and members of Congress from the South that the conditions were as bad as painted. There seemed a general feeling that the President was sincere in his desires to be of service, but that he had overestimated the seriousness of the situation. The Surgeon General called a conference of thirteen state health officials, representing the southern states, at Washington on August 4. This Conference adopted resolutions to the effect that there is but little increase in pellagra over previous years. They recognized the necessity of coping with the problem at all times, however, and expressed their wishes for effective cooperation between state and Federal officials.

These examples show, as General Sawyer says, that the President considers the public health as one of the Nation's most valuable assets and that he wishes to do all in his power to assist this Country in making progress in its protection. The health of all the people is something in which everybody is and should be vitally interested. With such backing and support as can be given by the highest office in the country, there is no reason why the science of public health should not attain greater achievements than ever before in the history of these United States.

### Birth Control Conference

A conference has been called in New York City for November 11, 12, and 13, which is the first American Birth Control Conference. Discussions are announced as follows: (1) The question of population and social aspect. (2) Medical aspect and private discussion of practical methods by authorized delegates. (3) Mass meeting and organization of an American Birth Control League.

The Conference will be attended by those economists, doctors, and social workers who consider that the time is opportune for a national discussion of controlled birth rate.

# Mental Health Maintenance Emphasized

## Mental Hygiene Takes Full Account of the Behavioristic Significance of Mental Attitudes

By R. R. SPENCER, M.D., P. A. SURGEON UNITED STATES PUBLIC HEALTH SERVICE, WASHINGTON, D. C.

NO ONE for a moment would claim that there is a dearth of information in our literature upon the subject of health. Quite the contrary is the case; yet 90 per cent of it deals with physical rather than mental health. The study of the means by which mental health and efficiency might be attained is, of course, equally important and quite as interesting as physical health maintenance. It may be true that the attainment of complete mental health is a more difficult task to the average individual than that of physical health. It is evident, however, that its importance cannot be too strongly emphasized and it may be safely stated that the means to its attainment is available to all who take the trouble to seek it.

### Health Is Defined

The term physical health is usually applied to the proper functioning of the body processes. As far as I know mental health has not been defined, so for our purpose, it may here be called that state of the mind in which the mental faculties and qualities so function as to be of the greatest good to the individual and the greatest service to the race.

While reviewing recently some of the fundamentals of modern applied psychology, considerable regret was felt that this information had not been received earlier in my preliminary education. Of the general course in psychology which had been received, all that can now be remembered is that it was a very uninteresting subject which taught something about the mind being the sum total of mental processes. Yet applied psychology is not only intensely interesting now but fills a long felt but heretofore indefinable need.

As a general rule, the average citizen considers psychology a difficult subject and gives it a wide berth whenever he meets it. Yet the fundamentals of this subject, when properly presented, are easily understood by anyone; and with its universal application in the schools, a better citizenship will undoubtedly follow. Not alone the teaching of the principles of psychology but the daily practice

*Man has succeeded in reducing the forces within himself so as to build up a civilization; but, on the other hand, has gradually become so constituted that when these same forces are uncontrolled they destroy and distort his personality.*

*Whence the necessity of discovering in the heterogeneity of scientific studies the universal laws governing the processes of thought, the physiological basis of normal mental development, and the means of achieving dynamic control.*

*For it is not physical rigor nor mere incubus of knowledge that counts in improving the race, but the consistent stimulation of all factors which favor reactions on a higher plane.*

and application of these principles is the real key to mental health.

Again, the habit of mental efficiency and health, properly implanted, will do much toward making clear the true relationship of mind and health and will eventually replace and neutralize some of the prevalent misconceptions upon this subject. For example, the influence of mind over matter, although a great truth, its limitations are not always realized, and when the limitations of any truth are not fully taken into account more harm than good may result.

### The Interest in Health

When the statement is made that good health is the first and greatest of all assets; that with it everything is possible and without it practically nothing; that the maintenance of health is a duty we owe ourselves, our families, our business, our community, and our nation; that although the importance of health is obvious to all, yet few people give any thought or time to health until they are sick; one may justly be accused of dealing in platitudes and glittering generalities which form a part of every sanitarian's propaganda equipment. On the other hand, statements such as these do carry a great volume of

truth and are often times necessary in order to create a sufficient degree of feeling to stimulate people to act in behalf of their own welfare.

Fortunately, there never was a time when people in this country gave more thought to the preservation of health than now. This renewed interest in health may be partly explained as a reaction to the great human wastage caused by the late war. Ample evidence of this interest is seen in the phenomenal growth of the modern health conservation movement. The Red Cross societies, the anti-tuberculosis associations, infant hygiene, school hygiene, industrial hygiene, rural hygiene, community health centers and other welfare activities are all expressions of this great movement.

### Mental Health Paramount

From another angle these activities, as pointed out by Sir Arthur News-holme, may be considered as manifestations of what Huxley has long ago called the ethical process—a process which is slowly replacing the jungle of law of “the survival of the fittest” by another, “the fitting of as many as possible to survive.” According to Huxley, this law “repudiates the gladiatorial theory of existence and in place of ruthless self-assertion demands self-restraint; in place of thrusting aside or treading down all competitors it requires that the individual shall not merely respect but shall help his fellows.”

However this may be, it is certain that one of the most important domains of all this broad field of health work is the maintenance of mental health, which may be classed as a subdivision of the larger and broader field of mental hygiene.

Since the success of all human undertaking is dependent upon the integrity of the mind, whatever may be said about the value of health conservation in general is doubly true in its application to mental health, for sanity of mind may justly be called the *sine qua non* of all success. For our immediate purpose, it may be pointed out that most health work very readily resolves itself into two distinct lines of endeavor: (1) the prevention

of disease, and (2) the maintenance of health. The first concerns itself with the study of disease with the idea of preventing it; the second with the study of health, with the idea of maintaining it.

In the field of mental hygiene, the maintenance of mental health begins where the prevention of mental disease leaves off. The prevention of mental disease usually leads to problems in eugenics and heredity, while the problem of mental health maintenance is largely a matter of environment and individual initiative, the latter after one has reached the age of accountability. Prior to this, the mental environment is beyond the control of the individual and rests mainly upon the influence of parents and teachers or upon the society in which one happens to be reared. Although this is a well recognized fact, it is rare to find, even today, a teacher or parent sufficiently equipped to furnish the child with the environment and training that the ideal of the mental hygienist demands.

This ideal should demand that each individual receive as early as possible and continue to receive throughout the formative period that environment which will insure the complete development of whatever mentality heredity has bestowed upon him. Of course, it is equally important to improve heredity, but that lies outside the sphere of individual health maintenance. Now, it is doubtful if any have ever received such an environment, and there are some who feel that this ideal, like the cessation of wars, may never be attained. But, of course, this is no reason why efforts should not be made in that direction.

### The Field Is New

Indeed, some progress along this line is already being made. A noted example is the recent establishment of a psycho-educational clinic at the University of Minnesota. The stated purpose of this clinic is "to carry on intensive psychological measurements of individuals, the results of these measurements forming the basis for necessary educational adjustments. . . . On the basis of these data it is possible to reform bad and establish good habits." This clinic boasts that what it is doing on a small scale, American schools will do in years to come. Necessity for work of this kind is emphasized when we learn that conservative estimates from various sources agree in showing that there are thousands of mental defectives in New York state outside of institu-

tions, while the state itself is caring for about forty thousand. Undoubtedly, poor mental and social environment is as much a factor in the production of this large number of mental derelicts as poor heredity. If there are forty thousand mental defectives in New York, it would certainly be interesting, if it were possible, to estimate the number of normal individuals who are mental misfits or, in other words, whose environment has been so unfavorable as to retard rather than develop their natural abilities.

Yet in one respect man is fortunate in that mental maturity is, as a rule, seldom reached until long after physical maturity, and the period of mental vigor may last twenty, thirty, or forty years. In fact, some of the best work of genius has been done after sixty years of age. So those who have reached adult life and have missed good early mental influences, or have dissipated their mental energy, need not be discouraged; for all normal individuals are capable, in large measure, of deliberately choosing and controlling their mental environment. For example, it is possible to set one's self the task of seeking good companions or the association of good books, or correct bad habits, or regularly exercise certain of the mental faculties.

Everyone knows that a splendid physique can be attained by means of continued and regular exercise of the muscles; but few realize that the same law applies to the mind, and that mental poise may be attained by the proper exercise of the mental faculties.

And this brings us to the point where we can see the necessity for requiring first some knowledge of the elemental principles of how the mind works before we can really maintain mental health. Without such knowledge one is in very much the same position as the man who learns to run an automobile without knowing anything of the mechanism of the machine. When something goes wrong he is helpless, and outside assistance is needed before the machine is again working normally. Therefore, the maintenance of mental health hinges, for the most part, upon individual effort.

### Train the Emotions

In order to further point out the importance of continued and sustained effort in this direction, if complete mental health maintenance is our goal, it might not be unprofitable to give briefly some idea as to the rôle

played by the emotional states.

Although a well known fact, few realize or profit by the influence of the emotional states upon our daily lives. Most people congratulate themselves that they are free beings, that the intellect decides and directs their actions, and that will is supreme over conduct. Yet after a little reflection it is seen that this is by no means the case. The major emotions of fear, grief, love, prejudice, and sentiments of various kinds exercise far greater control than the will or intellect in the lives of most people. As an example of what intellect fails to do and sentiment accomplishes without delay, it is only necessary to cite that familiar instance when you lie in bed long after the usual hour for arising. Cool reason, uncolored by emotion, tells you it is time to arise; but the idea is completely submerged by the snug comfort of the bed. Let the door bell ring and a friend be announced, you spring out of bed at once, the sentiment or fear of being found in bed at a late hour accomplishing what the intellect was powerless to do.

The power of the emotional states is not only shown in the conduct, but, what is sometimes just as important, this influence is so great that it may cause considerable bodily changes and influence physical health. This is particularly true if a given emotion is allowed to persist for a long period of time. Dr. W. B. Cannon of Harvard has demonstrated that strong excitement in man stops the secretion of the saliva, the gastric juice, the pancreatic juice, and the flow of the bile, as well as normal motions of the stomach and intestines.

The blood is suddenly shifted from the abdominal organs to the muscles and grain, the heart beat is accelerated, the coagulation time of the blood is lowered, the energy giving sugar content of the blood is greatly and suddenly increased and muscular fatigue is lessened.

All these changes are adaptive and purposeful reflexes preparing the body for violent energy, and show what a fundamental part the emotions play in our lives. The evil effects upon health are seen when one permits fears, worries, and anxieties continually to disturb the bodily functions. Cannon states that people who worry are evidently allowing the body to go on to what we may regard as a war footing when there is no war to be waged, no fighting or struggle to be engaged in.

While certain emotions, uncontrolled, cause bad effects and may en-

tirely upset mental and physical health, there are others, promoting both which are, in fact, essential. The emotions furnish the energy or fuel for our mental motors. It takes the heat of an emotion to weld an idea into vigorous effective action. All action is expressed with some degree of emotion, and its effectiveness is usually proportionate to the amount of feeling put into it. In the pulpit or on the stage it is usually the degree of feeling that one can put into the action that determines success. Anyone that has heard Billy Sunday, however much he may disagree with what the evangelist says, knows that every fiber of his being vibrates with feeling; so much so that thousands are persuaded to change their lives. The majority, however, fall back after a few weeks into the same life as before, because they are unable to summon or create sufficient feeling of their own to sustain them.

### Emotion as Motive Power

No one is capable of long continued effort or hard work of any kind without a great amount of emotion or interest back of it. It is a common saying that the thing we do best is the thing that we are most interested in and will work at the longest. If the emotions or feelings are essential to hard work, they are worth cultivating and improving; for no one denies the value of hard, honest effort. Nearly all the lasting good things of this world are the products of hard labor. Work will often do more for mental and physical ills than rest; and many a physician prescribes the rest cure where it should be the work cure. This is why Uncle Sam has established a Federal Board for Vocational Education. Disabled soldiers are given work adapted to their particular handicaps, and when the man and job are properly adjusted, the curative effect is marked.

Study the lives of any one of our great men and you will find that every one has been a prodigious worker. But back of the characteristic capacity for work there has always been great feeling and emotion and zeal. It is stated that Darwin held the opinion, as the result of a lifetime of observation, that men differ less in capacity than in zeal and determination to utilize the powers which they have. Emerson said that nothing great was ever accomplished without enthusiasm. The fact that war stirs the depths of men's emotions and often brings out their best qualities has been frequently pointed out, but religion probably has cre-

ated many more good emotions than war and is not accompanied by war's great disadvantages.

Emotion is only one of the fundamental mental processes. The road, therefore, to mental health lies in the study and development of *all* of the mental faculties and virtues. The acquisition of knowledge is of course important; but, up to the present time, our educational system seems to have depended on it altogether. One of our foremost medical schools has for years required a degree in arts or its equivalent as an entrance requirement, but it may be noticed that this school, like others, supplies its full quota of failures. The value of such a high entrance standard is conceded, but it would be wise also to include proficiency in some of the mental virtues, such as honesty, good judgment, perseverance, power of concentration, imagination, and the like, as a part of this standard. Why have these qualities been overlooked? Is it not common observation that the worst possible crook is a scientific and educated one? Does not our school system unwittingly turn out some educated scoundrels here and there, because of our failure to take these essentials of mental well being into account?

These questions bring to mind a series of portrayals called "Life's Little Jokes," by one of our popular cartoonists, who has very well shown what our system of education does not do. He usually portrays two young men starting out in life together. One has a brilliant mind, leads his class and takes all the honors at college; the other is a dull witted individual who barely gets by. In later life the tables are turned, the slow wit is at the head of his profession, while the honor man at college is now obscured in mediocrity. Such cases not infrequently occur in reality, and the cartoonist's closing comment, "It's all wrong, it's all wrong," causes some persons to underestimate the value of a collegiate education. What is it that's wrong? Nine times out of ten the answer is that one developed his mental capacity by means of continued effort and hard knocks, whereas the other depended entirely on his natural ability and, because of it, was allowed to neglect the essentials of mental training.

No serious criticism of our schools is now justified because, fortunately, educators are beginning to see the need of developing mental qualities as the true basis of character and of placing less emphasis upon the mere

acquisition of knowledge, but the people as a whole are not aware of this need, and it is hoped that the future will see a great deal of progress in the field of mental health. Physicians will probably take the lead in this progress, because the most progressive element in the medical profession is already aware of its new responsibility and new relation to the community, as is shown by a paper read by Dr. Donald B. Armstrong of Massachusetts before the sociological section of the American Public Health Association, in September, 1920, in which he says:

"The theory of medicine has developed in three stages: (1) the physician existed as an individual in the community with the sole object of *making sick people well*. (2) There was added the conception that he might *also keep people well*—a social conception, requiring an organization, and hence our health departments and allied social devices. (3) Finally, there is being added a new idea, namely, that the physician should not only cure sickness and prevent sickness, but he should also create health."

In conclusion it may be stated that a very hopeful sign of the times is shown in the fact that one of our universities has very recently instituted mental tests as an entrance requirement, and another is establishing a psycho-educational clinic in connection with its medical dispensary.

### Health Work and Motion Pictures

In his report on the years work of the National Tuberculosis Association ending June 1, 1921, Charles J. Hatfield, managing director, gives the following figures on the motion picture service of the Organization:

During the year 450 bookings were made and fifty-nine films sold. At the present time nineteen films of ten different subjects are available for loans. As a result of the general demand the Association has just produced a new motion picture dealing with the Modern Health Crusade. Arrangements have been made for the production of another picture dealing with the hopeful or cure side of tuberculosis which will be released about November 1. The films have been a highly effective adjunct.

Science should always protest against the practice of making children work before the fifteenth year, for this causes a misshapen, crippled, and stunted humanity. Where are the legislators who have sufficient courage to check this social evil?—Amar.



# Standardized First Aid in Industrial Plants

## Forethought and Training Insure Intelligent Reactions in Emergent Situations

BY R. A. BRINTNALL, M.D., DIRECTOR OF FIRST AID, LAKE DIVISION, AMERICAN RED CROSS, CLEVELAND, O.

IN PAST years the large corporations which have been doing the splendid things along lines of welfare work for their employees seemed to think that any publicity of activities would be misconstrued by the public in general. That time is past, and today the public not only desires to know of such service but is delighted that such service is being given and sees in it a mighty help toward Americanization and mental, moral, and social uplift. This is as it should be, and the coming years will see in larger measure unremitting effort to serve humanity everywhere and at all times, in a proportion commensurate with humanity's needs.

The instruction of employees in first aid is a service of this kind, but the service is not confined to industry alone. The demand is a logical result of the hazard of traffic conditions in our cities, the more common use of automobiles and power machines in the country, and the growing complexities of industrial life. When we stop to consider the large number of accidents each year, with the resultant death rate that is estimated at seventy thousand—71,364 violent deaths in 1918, exclusive of suicides—along with the fact that accident is no respecter of person or place, it would indicate that the larger the number of people trained in what to do and what not to do in an emergency, the greater the asset to any community.

### A General Requisite

There is so much that a person can learn to do at a time of accident or disaster that it is almost a requirement of good citizenship to have this knowledge. Because of the frequent occurrence of accidents, and because many of them take place under circumstances which make it impossible to get a physician at once, the value of training in first aid cannot be overestimated. This has been recognized by one of our large industrial companies, which for eight years has been giving this instruction to its employees on company time and at company expense. This article constitutes a story of how they have carried on this work and gives a de-

*Just as the success of an individual requires unity of interest and complete integration, so does effectual group reaction depend upon the formulation of group objectives and training in team work.*

*Men are better individuals for this extension of interests and coordination of effort. Thus specialized efforts looking toward the control of specific industrial problems have served to illuminate innumerable social and therapeutic questions.*

scription of one of the largest first aid contests ever held in this country.

The Bell Telephone System has the unique distinction of bringing to the public a practical demonstration of this kind of work. Since the winter of 1912-1913, the Bell Telephone Company of Pennsylvania has been training its men in first aid work and life saving. The training has been given to the employees by forming units in each town and in each line of telephone work so that there is available at all times one or two men in each department able to render first aid to the injured. In this manner much has been accomplished in the way of concrete results, one significant indication being the reduction in the number of lost-time accidents as shown by the following comparisons:

Lost time per every 100 employees was—in 1916, 10.47; in 1917, 7.62; in 1918, 5.66; in 1919, 3.98; in 1920, 2.69,—which means that they have

succeeded in reducing the lost-time accidents in 1920, 7.78 as compared with 1916.

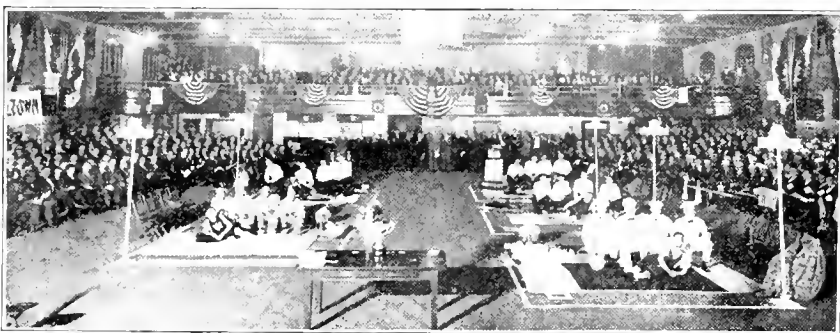
As the training of these groups had been carried on for a number of years, it was conceived that active competitive effort between groups would help to maintain a continued and well sustained safety activity. To this end there were organized safety meets in which the groups of the different divisions competed with each other for a record. These have been carried on by the Bell Telephone Company since 1916, and a description of the last meet at Philadelphia will give a very good idea of how these contests were carried on.

During the early part of this year the Bell Telephone Company of Pennsylvania had three first aid contests, one at Pittsburgh, one at Harrisburg, and the third and last at Philadelphia. This contest was held under the auspices of the Philadelphia Division of the Bell Telephone Company and the American Red Cross. There were eleven teams of five men each entered in the contest. The rules governing were as follows:

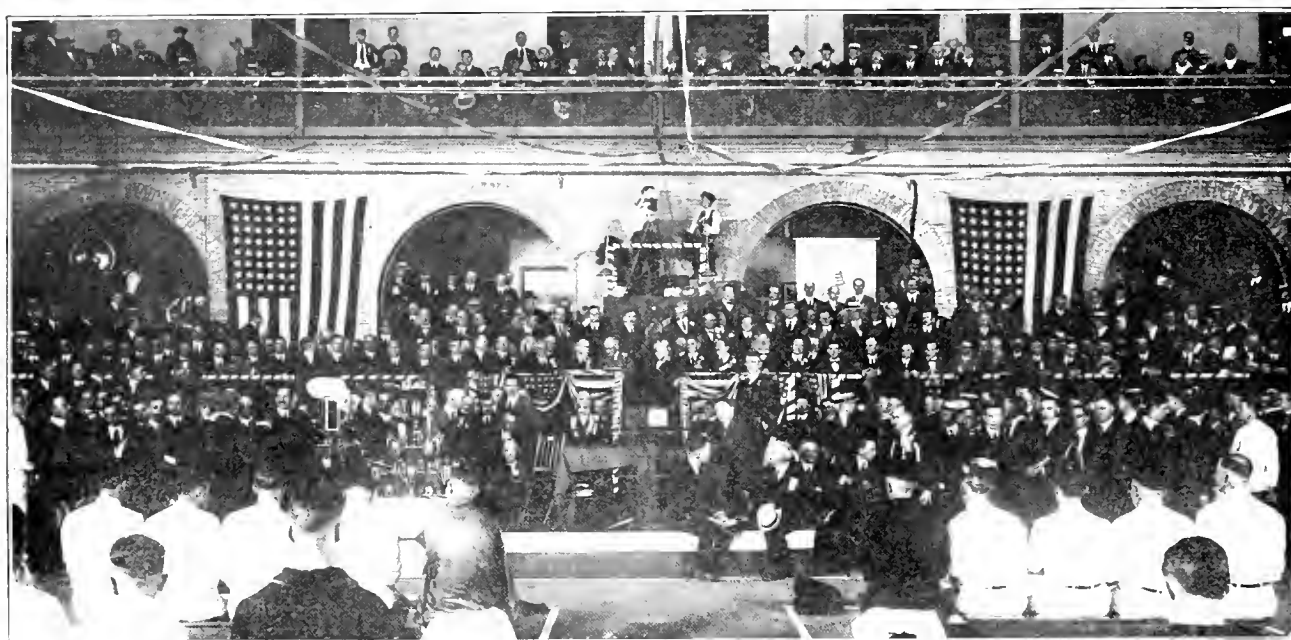
In the performance of each event the captain of the team designated the members or members to perform each event after it had been announced.

The captain controlled his team in its work, but only when the full team was engaged. The captain or other members could not prompt the person or persons performing in the event unless they were actually participating.

The captain could himself contest in one and two-man events.



The Harrisburg Division in the First Aid Contest of May 9, 1921.



The Philadelphia meet, showing guests on platform and prizes to be awarded.

An event embraced a problem which called for treatment of one or more injuries and the handling of the patient. In the Philadelphia event there were five problems:

#### Problems for Demonstration

*Problem No. 1: Full time event.*—Patient found with left ear torn off, right collar bone broken, cut two inches long on calf of left leg, expelling blood in spurts; simple fracture of right leg below the knee.

Give first aid treatment and prepare for transportation. Time allowance, eight minutes.

*Problem No. 2: One and two man events.*—(a) One man event (patient to sit on a chair). Simple fracture of the seventh and eighth ribs on right side. Cut on top of head. Profuse bleeding. First aid treatment. Regular patient of the team to administer the treatment to the captain.

(b) Two man event. Left foot crushed and right hand cut off at wrist. Use closed hand as stump. First aid treatment and carry patient—(two-man carry) from a sitting position on the floor around one end of the enclosure. Time allowance, four minutes for both events, not including the time consumed in carrying patient.

*Problem No. 3: Full time event.*—Patient found unconscious in smoke-filled room. Drag patient four feet to a place where an upright position can be obtained, then carry across back to where three men are located. All four men resuscitate victim by means of artificial respiration for one minute—prone pressure method—and treat burns on back of neck and left upper arm of shoulder. Carry patient around one-half of the enclosure on improvised stretcher made of poles and coats, or poles and blanket.

*Problem No. 4: Full time event.*—A man met with an automobile accident in which he received the follow-

ing injuries: Compound fracture of the right thigh (middle third); lower jaw fracture, with slight laceration on upper right side; dislocated left shoulder. Give first aid treatment and prepare for transportation. Time allowance, eight minutes.

*Problem No. 5: Full time event.*—Patient found unconscious lying on an electric light wire. Remove, resuscitate, and treat burn on left shoulder blade and an injury to right eye. Carry patient on stretcher around the enclosure, over the obstacle, and through the narrow passage, in arms.

The teams had no knowledge of the problems in advance of the contest. Just before the performance of each event the chief judge announced the problem and the captain of each team was at the same time given a written copy of the problem and allowed two minutes in which to discuss it with his team before starting work.

Each team had a standard bearing the name of the team. At the conclusion of the event the captain held the standard aloft until recognized by the timekeeper, thus signifying completion of the problem. The team remained at its post until relieved by the judge.

#### Red Cross Standards

The Industrial Edition of the American Red Cross "Textbook on First Aid" applied in this contest. Each team participating had been trained in first aid according to Red Cross standards. The awards given were: First—Division Trophy and Red Cross Medals to the team having the highest score. Second—American Red Cross Certificates to the team with the second highest score. Third—Cup to district having the highest

percentage of employees participating in the preliminary contests.

The judges were all physicians and performed their work progressively. Judge No. 1 judged Team No. 1 in Event No. 1, and he judged Team No. 2 in Event No. 2, etc. Judges thus progressed in each event to the team of next higher numerical designation, returning to the first team when they had progressed through all others.

Each judge was required to scrutinize the work done in each event and could call on the captain or member of the team who applied the aid, to explain his treatment.

Suitable record sheets for use of the judges were furnished by the chief judge prior to each event. These were used for recording the discounts and were delivered to the chief judge after each event, who, in turn, handed them to the tellers to be recorded.

#### Special Events Arranged

Ties were decided by a special event to determine the relative standing. All events began and stopped at the sounding of a bell. Signals were as follows:

(1) One ring called for attention of captains for instructions from chief judge.

(2) Two rings indicated, "Begin work" and not to start before the signal was given.

(3) Three rings indicated time allowance for completion of problem was ended.

Time was not an element unless the team of men performing the problem exceeded the allotted time or failed

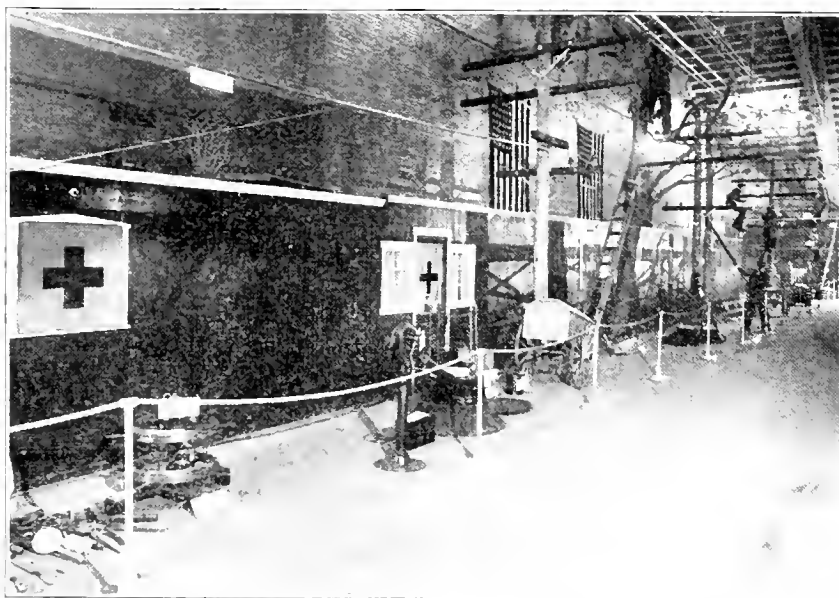
to give treatment promptly. A penalty of one point for each minute, or fraction of a minute, was given for time in excess of the allowance.

The Fifth Annual First Aid Contest held under the auspices of the Philadelphia Division of the Bell Telephone Company and the American Red Cross at the Third Regiment Armory on Wednesday, May 18, was from all angles the most complete and successful ever held by that division. The new records which had been established at each of the four previous annual contests were at the last meet pushed up very close to the top.

It was a veritable three-ring, two-fisted, one-hundred-proof exhibition of what men can do to prevent injury and save lives. Safety devices and safety exhibits were placed all around the room, together with data describing what had been accomplished and what could be accomplished. One thing of interest in the exhibits was the fact that employees of the Bell Telephone Company, through their knowledge of first aid, have saved the lives of nine persons not in the employ of the Bell Telephone Company, this by happening along at the time of the accident. Several of these instances will be given in detail in the latter part of this article.

More than two thousand eight hundred spectators were present in the big event. The doors were open at seven o'clock to allow those arriving early an opportunity of looking over the exhibits. Many of the teams and their rooters met at appointed places and marched into the Armory waving flags and banners, wearing colored caps and badges, and accompanied, in some instances, by groups of their men dressed in historic and comic costumes. One outfit had a comic Kazoo band, with a goat for a mascot. The plant men of the different divisions and districts who came out to root for their teams took their seats in the spaces allotted them and sang their songs and yelled their cheers under the leadership of their own cheer leaders. A large number of guests, many of whom came from different parts of the country to witness the event, were seated on the platform at the front of the Armory. Among these were Mayor Moore of Philadelphia and representatives of the Bell Telephone Companies in the United States and Canada.

There, too, at the opposite end of the hall, were the Building Team, which won the cup at the Pittsburgh Division Contest, and the Cumberland valley Team, which carried off the



Safety museums throughout the country and objective demonstrations everywhere of what constitutes safety both in practice and equipment, carry home their life saving lessons.

Harrisburg Division trophy, as well as a team from Newark, N. J., which was the title winner in the New York Telephone Company's First Aid Contest.

At the proper time these three teams marched around the rectangle to their seats, to the martial music of the Third Regiment Band, which was on hand for the occasion. Next came the cup, mounted on its pedestal and bedecked with flowers and ribbons, borne by four office boys in uniform. At last came the competing teams from the Philadelphia Division—eleven in all—which were greeted on all sides by the acclamation of their fellow workers in the rôle of rooters.

### The Results Summarized

Mr. H. B. Porter presided at the meeting and in his introductory remarks briefly called attention to some of the things accomplished in accident prevention and first aid:

During 1920 the Division forged ahead, scoring the best records for reduction of accidents in its history. The Accident Prevention Competition was very close. Under the rules the forces are rated in accordance with the reduction in disability days per one hundred employees, compared with their own record for the three years preceding. Four of the forces came through the year with 100 per cent records, having no lost time for accidents. One group had no disability accidents from September, 1918, to the end of 1920, a period of twenty-seven months, with an average of 130 men, or 87,750 working days. The combined record of the four groups with no lost time from accidents up to the end of 1920, approximates a total of 173,550 working

days, the comparative record for the Philadelphia Division being as follows:

	1916	1917	1918	1919	1920
Number of lost time accidents per 100 employees	12	8	7	4	1.4
Days lost from accident per 100 employees	115	98	75	45	21

Progress in First Aid team work may be judged by the following figures, the second column showing the number of five-man teams in preliminary contests and the third the percentage of entire force eligible represented on teams:

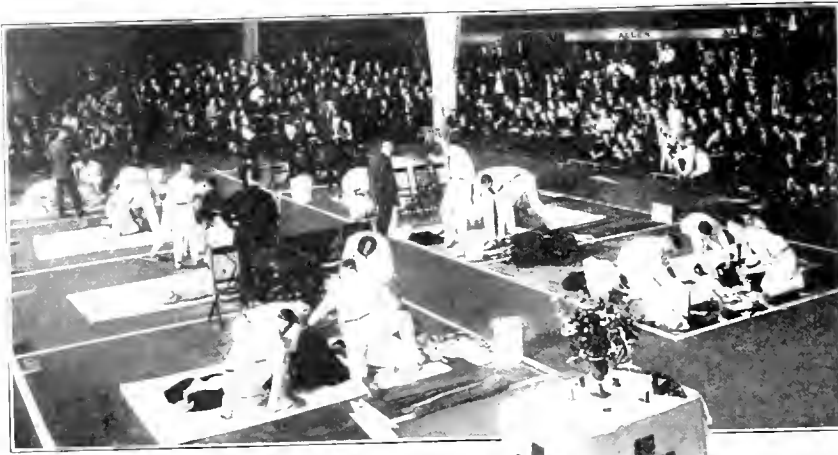
Season of	Preliminary Injuries	Percentage in Finals
1916-1917	163	40
1917-1918	222	63
1918-1919	216	78
1919-1920	347	93
1920-1921	308	98

As the teams performed their work many hundreds of eyes watched their every move. A considerable number of spectators had themselves taken part in the first aid team work in preliminary contests and doubly appreciated the efforts of their representatives. During working periods the crowd became quiet and tense, only to break forth in cheers as their participating team would raise its banner, denoting the completion of a problem.

After the fifth problem was completed and the tallies were counted by the tellers, Mr. Porter read the scores to the eager groups of contestants and spectators as well, the Camden team taking off the honors. The scores were as follows:

Camden	99.4	Chester	95.4
Equipment	99.0	Motor Vehicles	95.4
Morristown	98.4	Trenton	94.8
Maintenance	98.0	Wilmington	94.4
Buildings	97.0	Construction	92.6
Atlantic	97.0		

Major Shields, on behalf of the American Red Cross, presented medals to the members of the winning team,



If first aid in industry is to become standardized, rules and regulations must be put to repeated demonstration. It is quick reaction time, individually and collectively, in emergencies, that makes such work effectual.

and the Red Cross Certificates to the members of the second team.

### Team Work Adds Value

The snap and technic of perfect first aid team work demonstrated beyond a doubt what first aid training can do in the promotion of health and the saving of life in industry.

Early in their safety efforts the Bell Telephone Company realized that effective first aid training can only be acquired by actual practice. In the treatment of minor injuries such as cuts, abrasions, or burns, it is important to know what materials should be used and how to apply them effectively. To place a bandage so it will serve its purpose and remain secure, or properly to put on splints for a fracture, it is necessary to work on some actual problem. To cope with serious cuts or arterial bleeding, some knowledge of the location of the arteries and the pressure points is required, and to restore life when breathing has been suspended, the correct application of artificial respiration must be known.

It would seem that the Bell Telephone Company has demonstrated beyond any doubt the value of first aid training among employees. The different opinions on the subject held by various industrial physicians is due mostly to the fact that they have never attempted to find out just what first aid among employees means. Instructing employees in first aid makes no attempt to make physicians out of them. On the contrary, they are always instructed to call a physician; but a physician, like a policeman, is usually not around when you want him, and the knowledge of first aid and a knowledge what *not* to do, as well as what to do, is very essential.

The Red Cross wishes to carry the message of first aid wherever it can and is willing at all times to do anything in its power to assist any industry or group of persons to this end. This organization has endeavored to promote classes in first aid throughout the entire United States. These classes are taught by a practicing physician of good standing, using the American Red Cross "First Aid Textbook" and giving the course under standards set up by that organization. The course comprises fifteen lectures and demonstrations of one hour each, or ten lectures of one and one-half hours each, a certificate being given each student upon the completion of his course. In order to secure American Red Cross First Aid instruction, application should be made directly to the local Red Cross Chapter of the city or county in which one resides. In the absence of a chapter, application may be made to the Director of First Aid in the Division in which one happens to live. A list of the American Red Cross Divisions with the states included in each Division, and the address of the central office is given herewith:

*Northwestern Division.*—Alaska, Washington, Oregon, and Idaho. 315 University St., Seattle, Wash.

*Pacific Division.*—California, Nevada, Utah, and Arizona. Civic Center, Hyde and McAllister Sts., San Francisco, Calif.

*Central Division.*—Montana, Wyoming, North Dakota, South Dakota, Nebraska, Minnesota, Wisconsin, Illinois, and Iowa. 308 North Michigan Ave., Chicago, Ill.

*Southwestern Division.*—Colorado, New Mexico, Kansas, Oklahoma, Missouri, Arkansas, and Texas. 901 Equitable Bldg., St. Louis, Mo.

*Lake Division.*—Michigan, Indiana, Kentucky, West Virginia, and Ohio. Plymouth Bldg., Twenty-second and Prospect, Cleveland, O.

*Southern Division.*—Louisiana, Mississippi, Alabama, Georgia, Tennessee, South Carolina, North Carolina, Virginia, and Florida. 249 Ivy St., Atlanta, Ga.

*Atlantic Division.*—New York, Pennsylvania, Connecticut, New Jersey, Maryland, and Delaware. 44 East Twenty-third St., New York City.

*New England Division.*—Rhode Island, Massachusetts, New Hampshire, Vermont and Maine. 73 Newbury St., Boston, Mass.

As to the value of first aid, not only in industry but in all walks of life, the following examples of what has been accomplished should be convincing proof:

Last January, while three of the Bell Telephone Company employees were working along Wilmington Haymorton State Highway, they were appealed to by a man who stated that a big truck had crashed into a pole about a quarter of a mile away, at the foot of a steep grade. The men appealed to, having been trained in first aid by the Bell Telephone Company, went immediately to the scene of the accident in the company's car, where they found the driver of the truck so tightly jammed in the wreckage that it was a difficult thing to remove him. After his removal it was found that the steel plate on the dashboard had almost severed the left foot above the ankle and he had been badly cut and bruised about the head and face. As soon as the man was moved the leg started to bleed profusely, with all signs of arterial bleeding. Their knowledge and ability to apply a tourniquet probably saved the man's life. The man who accompanied the driver had a compound fracture of the right arm, which was dangling at his side and paining him very much. The first aid knowledge of the relief workers enabled them to put this arm in a splint, in a comfortable position, until the patient could reach medical aid.

On March 19, two employees of the Bell Telephone Company at Shooters Island, near Mariners Harbor, heard a cry from the men on a gasoline launch that was bringing employees to the shipyard. The exhaust from the gas engine had escaped from the muffler into the cabin of the launch, overcoming several men, who were in varying degrees of prostration. On reaching the launch they saw a negro worker stagger to the deck gasping for breath and reel overboard. Other dazed men were making their way to shore. In the excitement of fishing the negro from the water, the cabin was not investigated for a few minutes. Later they discovered the body of a young man lying unconscious on

the cabin floor. Breathing had ceased by the time the man was taken on shore. The Telephone Company men, who had been trained in first aid, immediately started artificial respira-

tion by the prone pressure method and, after about ten minutes of vigorous work, breathing was resumed and the patient out of danger. These men had been given the opportunity to put

to practical test what they had learned in first aid classes, and in this test they demonstrated their ability to save life. Such knowledge and training should be universal.

## Illumination as a Factor Favoring Production

### Lighting Codes Need to Consider, Along with the Nature of the Lighting, the Reactions of the Worker

BY R. E. HARRINGTON, LIGHTING SERVICE DEPARTMENT, EDISON LAMP WORKS, HARRISON, N. J.

THE question of correct and adequate artificial illumination is one which warrants careful consideration by plant managers. It is one form of expenditure which brings the greatest returns for the money invested. In spite of this fact, many plant managers have neglected this opportunity to increase the overall efficiency of their plants. This is evidenced by the many examples of factories that are not only inadequately illuminated with regard to the amount of light, but are improperly lighted from the standpoint of reflecting equipment and location of lamps.

A plant manager, in planning for operation must include, in his general scheme, a means of providing artificial illumination. This, of course, means an initial investment in material and work for the installation of the system. That it is a sound investment to plan a system that will give proper, as well as adequate, illumination will be shown later on. In plants already equipped, but poorly lighted, it will be found economical to discard the old system and install a modern one.

With a properly designed and installed lighting system there will result, as contrasted with the conditions under a poor system, better health conditions, less labor turnover, greater activities, better workmanship, fewer accidents and decreased spoilage. All of these factors combined assist toward the desired end—increased production.

#### Health of the Worker

No one needs to emphasize the absolute necessity of protecting the eyesight of the worker. If sufficient illumination is not provided, the eyes are continually subjected to a strain in their attempt to discern detail. This rapidly fatigues, lowers the bodily efficiency and may produce permanent injury. Even with plenty of light, if brilliant light sources are

permitted to be in the field of view, bad health conditions result.

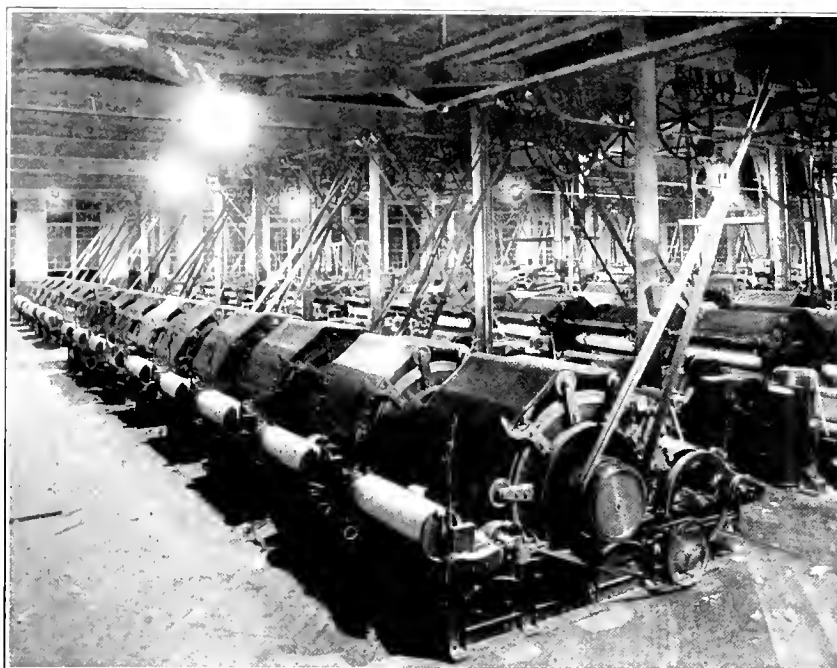
Several states, recognizing the beneficial effects of illumination on the health and safety of employees, have adopted lighting codes. These stipulate the minimum intensities permissible for certain operations, and also indicate the desirable intensities. These codes also indicate the allowable equipment to be used in order to eliminate glare, etc.

Good lighting is also reflected in the faces of the operators, in the form of healthful, buoyant spirits. Bad lighting is irritating because it makes it difficult to see, and strain is involved in the efforts of workers to adapt themselves to unnatural conditions. The mind, unconsciously, perhaps, becomes obsessed with the idea that it is being imposed upon. Everyone has seen this condition evi-

dent in employees; possibly the reader himself has experienced this feeling of resentment. Bad lighting will react to produce nervous, irritable, discontented employees.

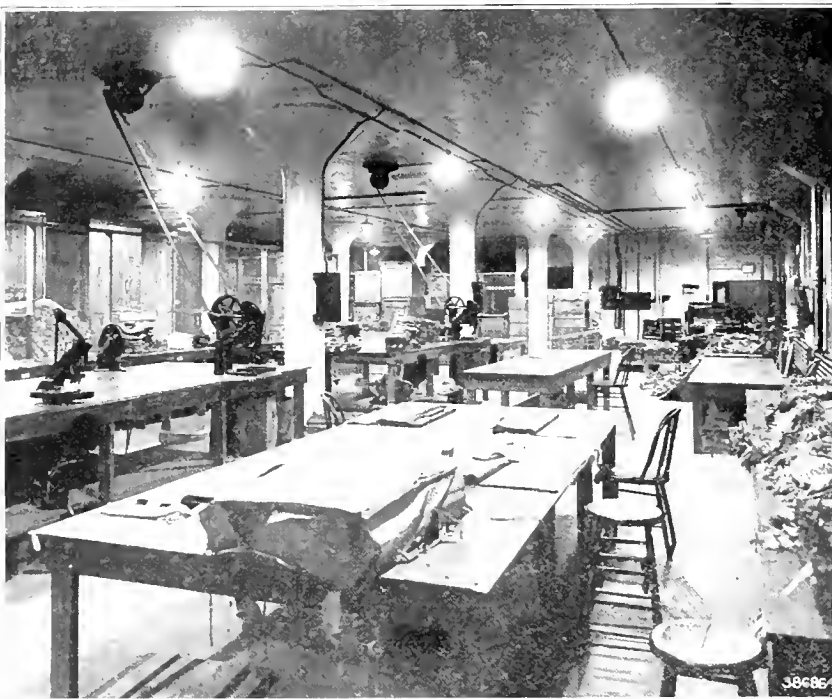
Any plant manager knows that the experienced or trained man is an asset not easily replaced. If this man has been working continuously under insufficient illumination, its detrimental effect will eventually show up in his failing eyesight. He becomes incapacitated at the very time when he should be yielding the biggest return on the investment made in training.

The general appearance of the plant is materially improved, on account of the cleanliness which of necessity results. Dirt and refuse will not be permitted to lodge everywhere, if it is revealed to the scrutinizing eye of the superintendent.



The illumination in this card room in a southern cotton mill is accomplished by means of 200 watt lamps in deep bowl enameled steel reflectors. The white walls and ceilings, as well as light colored materials, assist in making this a very cheerful work room. Every part of the space is well illuminated, moving parts are easily seen, and work can be carried on with maximum speed.





An excellent example of high intensity illumination. The lamps are 200 watt, placed near the ceiling, with reflectors. An intensity of over ten-foot candles is provided. Employees in such conditions as this will be contented. Even though the work carried on in this case (cutting material for flags) is likely to produce a considerable amount of scrap, cleanliness is a direct result of high intensity illumination.

Dark corners always tend to gather waste material.

The question of shop sanitation is one that is receiving ever increasing attention, for an employer fully realizes that a healthy operator is an asset to his plant. Proper illumination is one of the greatest helps in attaining this result.

### Labor Turnover Affected

It has been demonstrated with absolute certainty that everyone prefers a cheerful, clean, well-lighted room as a place to work. If a shop is well lighted, it will perforce be clean and will become a veritable magnet in attracting help. Cases are on record, where one mill in a section has been markedly better illuminated and has actually, through this means, obtained the very pick of the hands in the surrounding country.

At one time, not so far distant, it was assumed by many employers that a continual changing of employees was the best means of keeping down labor cost. Today this is not true, as such a method disrupts the organization, increases mistakes and accidents and, in fact, lowers the entire efficiency of the plant.

This, then, is the changed viewpoint of the employer as regards labor turnover. Parallel with this change has been one of as great importance in the case of the employees. They have been gradually taking a more

active part in saying what their working conditions shall be. If these are not satisfactory, they will quit and go where conditions suit them.

Since adequate illumination has a very marked influence on many of the items which labor is vitally interested in, such as health, safety, etc., it is obvious to conclude that the well-

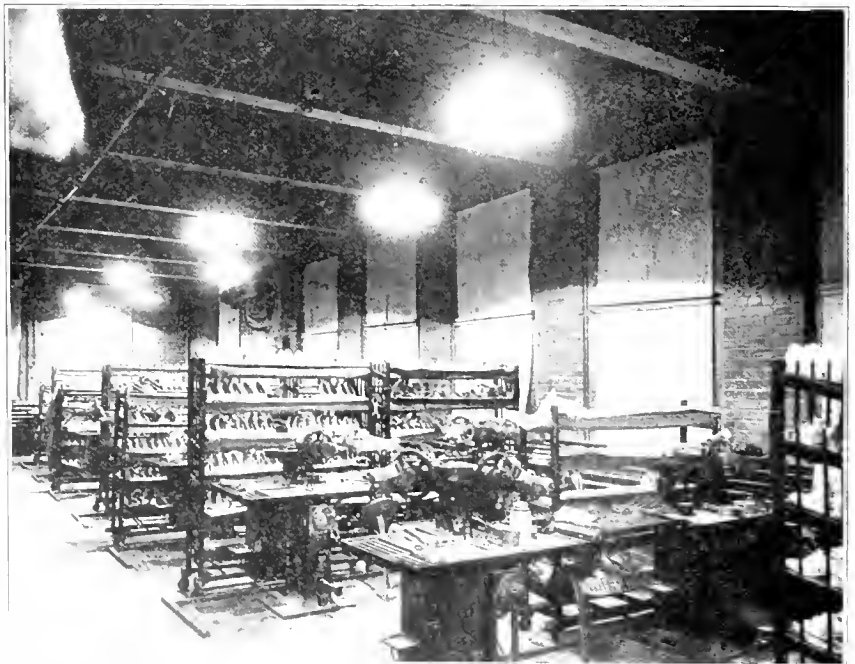
lighted shop is one in which the labor turnover will be at a minimum, other things being equal.

A survey of the accident records of insurance companies show that the greatest number of accidents occur during the days of least natural light. These records also show that about 25 per cent of all the industrial accidents might have been avoided, if adequate illumination had been provided. In fact, insufficient illumination is frequently held by juries to be contributory negligence. These points are, in themselves, sufficient evidence of the relations between correct illumination and safety. For further material on the relation between illumination and safety, refer to Lighting Data, Index 18.

### Spoilage a Result

There is no doubt that spoilage and "seconds" are one of the greatest "bugbears" of the manufacturer. Spoilage means a direct loss, as there is no return on the investment in material, labor and overhead. "Seconds" are nearly as bad; for, while they have some redemption value, they represent as much investment as "firsts," but not as much selling value.

That correct and adequate illumination has a very marked effect on the question of spoilage, is recognized. The mechanic can more easily and accurately read his blueprints, micrometers and gauges. When working to thousandths of an inch, the reading of a micrometer a thousandth



A treeing room in a shoe factory with lighting so chosen and so placed that all working points are well illuminated. Such lighting assures a high quality of product, as every operation can be carefully observed.



off, may mean the difference between a "first" and a "second."

This argument does not alone apply to the mechanic. The carpenter, the weaver, in fact, everybody will find it easier to work correctly under a good system of high intensity, than under many of the systems at present in use.

One of the aims of the plant superintendent is to keep down spoilage. Since correct illumination is one of the obvious means to this end, it is surprising that so little attention is paid to it.

### Lighting and Production

All of the effects of adequate illumination just considered have a very marked influence on production. It is obvious that a sanitary plant in which the employees are contented, and where accidents and spoilage are at a minimum, must be one in which production is high. There are other reasons, also, why the well lighted plant shows better production than the poorly lighted one.

It is axiomatic that, for a plant to operate at all, it is necessary to provide means of illumination. Natural lighting in modern plants is obtained by the use of large window areas, and care is taken in designing these windows, in order to secure the best natural lighting conditions. Why should not as much care be taken regarding the artificial lighting? The latter must be paid for, while the former is free.



High level, well diffused illumination is essential where fine work and polished surfaces are encountered. In this machine shop approximately nine foot-candles are secured through the use of 300 watt lamps in reflector-cap diffusers.

What are some of the effects when the artificial lighting is inadequate? The employee has been accustomed to daylight intensities, and if, when the artificial system is turned on, the intensity is low in comparison, his movements must slow up. He must be more cautious, for he has not the confidence which comes with clear vision. If he cannot readily see the figures on his micrometer or gauge, he loses time checking his work.

If he drops a tool, or piece of work, and it falls into a dense shadow, a few moments must be spent in searching for it. If his artificial light is of a type which is under his control, considerable time may be spent in adjusting it to suit his whim. It is perfectly obvious that all these items combine to decrease production. Conversely, if the illumination is adequate, the workman proceeds at his normal speed, and one can scarcely notice the effect of the diminution of daylight.

In addition to these effects, it is known that, under high intensity illumination, the eye functions more rapidly and more accurately than under low intensities, which means that the employees are able to perceive details more easily and correctly. This effect can be interestingly shown by means of a shutter arrangement similar to that found in cameras. A printed letter or figure should be placed back of, and close to, the shutter opening. When the shutter is operated under low intensity illumination it is impossible to distinguish details of the letter. If high intensity illumination be substituted for the low, it will be found that the letter can be read with perfect ease.

It has been stated that the above mentioned points are theoretical, and that the cost of installing and operating a good system outweighs the saving of employees' time. That this is not true, is shown by the following table of annual costs. This table is based on the use of a 100 watt Mazda



Night view of an office with high level general lighting. The semi-indirect unit is employed. When such a system as this is correctly designed and installed, there is no necessity for locating desks with reference to the lighting units in order to secure satisfactory illumination, and work after sunset is as satisfactory as during the daytime.

C lamp per operator per 100 square feet, and shows the very small saving in time required to offset the cost of operation. In the tabulation it is assumed that the lamp burns two hours per day, three hundred days per year.

Cost of lamp (list, subject to discount)...\$1.10  
Cost of enameled steel reflector (list, subject to discount)..... 2.50  
Estimated cost of wiring, per outlet ... 6.00

Total first cost.....\$9.60  
Interest on investment at 6 per cent.... 0.58  
Depreciation on reflector and wiring at 12½ per cent..... 1.06  
Power at 5 cents per kw-hr..... 3.00  
Cleaning at 3 cents per cleaning, two per month ..... .72

Renewal of lamp  $\frac{600}{1000} \times \$1.10$ ..... .66

Total .....\$6.02  
Wages for 8 hours per day, 300 days, at 70 cents per hour are \$1,680.

Ratio of cost of lighting per man to wages  $\frac{\$6.02}{\$1,680} = 0.356$  of one per cent.

These figures, which are based on assumed conditions less favorable than ordinarily found, show that if a workman saves three minutes time per day, due to correct lighting, the entire operating cost of the system is paid for. They do not take into account the much smaller differential between the cost of good and poor illumination. Surely any employee will lose much more time than this under an inadequate system of illumination, when it is necessary to go to an individual lighting unit to read his figures, or to adjust the lamp in order to see his work better.

On the basis of the total cost of production, this percentage becomes so small as to be almost negligible. Indeed, it is surprising that the one factor having the greatest effect on production at minimum expense has, until recently, been neglected by the industrial world.

The arguments, so far advanced, have as their basis what has been considered, up to the present time, as adequate illumination for industrial plants. It is of interest to note, however, that what is considered at present as adequate illumination, is of much higher intensity than that deemed sufficient several years ago. This is due to several factors, such as the introduction of incandescent lamps of much higher efficiency, the higher cost of labor and materials, the demands of workmen for better illumination, the realization by employers of the beneficial effects of increased illumination, etc.

### Too High Intensities

What, then, are the limiting foot-candle values for artificial illumination, and is there such a thing as too high intensities? There are no limiting foot-candle values for artificial illumination with regard to the abil-

ity to see, provided the lighting system is properly designed and so installed as to avoid glare, etc. That the eye is able to adapt itself to very high intensities is evidenced by the perfect ease with which an employee is able to work near a window during a sunshiny day. The intensity in this case might easily range from 500 to 1,000 foot-candles. The question is properly not how much light, but whether proper use is made of a given light.

With regard to practical operating conditions, the amount of light to be used is influenced by economic conditions. That is, there is a point at which the cost of supplying higher intensities overweighs the results from increased production. What this point is, however, has not been determined. That we are far from it, on the basis of present day intensities, is evidenced by production tests made under increased illumination. That this relation of the amount of light, to the amount of production is of the greatest importance is shown by the attitude of many plant managers. In actual tests increased production under higher intensity illumination ranged from 8 per cent to 27 per cent, this over a period of a month under low intensity and a month under high. Parallel with this increased production, the high intensity illumination was found to result in better health conditions, less labor turnover, fewer accidents and spoilage.

### Foot-Candle Meter

In order for the plant manager to determine the intensities throughout his plant, it is desirable to have available an instrument, by means of which this may be done easily and quickly. The foot-candle meter is an instrument self-contained and portable which meets these requirements. Because of its small size, (7½ in. by 6 in. by 1½ in.), it may easily be used to make illumination readings at any desired point. The instrument is calibrated before being shipped and, by means of the rheostat and voltmeter, which are a part of the instrument, it is possible to read intensities varying from 0.1 to 40 foot-candles. Although it is not quite as accurate as a laboratory instrument, it is sufficiently accurate to be of real practical value. At least one foot-candle meter should be a part of the equipment of every industrial plant.

By means of this instrument, a check may be kept on the lighting conditions in the plant. The manager or superintendent may easily

determine whether or not the illumination for any given operation is comparable with what is considered sufficient for that operation. Complaints of various workmen regarding inequalities in illumination are readily settled, for the foot-candle meter will show the results secured.

Technical training is not necessary to the successful operation of the instrument. With a little experience, anyone may read the resulting illumination. All that is necessary is to operate the rheostat until the pointer on the voltmeter comes to the indicated position. The foot-candle meter is then placed at the desired location and the illumination read by balancing the light and dark spots on the face of the instrument.

## Congress Considers Many Public Health Matters

One hundred and twenty-one of the more than eleven thousand bills and resolutions that have been introduced in Congress since it convened in special session last April and up to the time when it recessed on August 24, have been concerned with public health or closely allied matters. This information comes from the National Health Council, the Washington office of which has issued eleven bi-weekly reports on national legislation of interest to health workers, during the first session of the Sixty-Seventh Congress. Of the 121 bills listed, eighty have been abstracted and their progress followed carefully. The other forty-one were considered of only indirect importance and so were merely cited. Statement No. 11 of the reports contained a review and index of all this national health legislation. Although these legislative reports were originally intended only for the members of the Council, the demand for them has been so great from other organizations that arrangements have been made to supply them at cost price, twenty cents an issue. They are prepared and distributed by Mr. James A. Tobey, Washington representative of the National Health Council, 411 Eighteenth Street, N. W., Washington, D. C.

## Pennsylvania Health Laws

The Pennsylvania Department of Health has just issued a bulletin giving a synopsis of the health laws of that state covering advertisements, the use of trucks, the disposition of dead bodies, food regulations, garbage, housing, as well as contagious diseases and numerous other regulations.

# Medical Measures Against Venereal Diseases\*

## The Necessary Clinics, Diagnostic Facilities and Cooperative Plan Between Physicians and Clinics

By COLONEL L. W. HARRISON, MINISTER OF HEALTH, WHITEHALL, LONDON.

IT IS generally agreed that the justification for the provision at public expense of venereal disease clinics is the necessity of preventing the spread of disease by rendering the largest possible proportion of the infected population non-infective. Public centers are necessary because a very large section of the infected population would, but for the public centers, resort to unqualified persons for treatment, or, if they sought the advice of experts, would be unable, for financial reasons, to continue treatment until definitely non-infective.

### A Three-fold Problem

The arrangement and conduct of public venereal clinics must have regard to three main factors, two of which militate strongly against their success as a public health measure, and the third is important to the public purse. The first is the fear of disclosure which is felt by most patients. The second is the tendency of most patients to cease attendance as soon as discomfort or disfigurement have ceased, which is long before they have been rendered non-infective. The third factor is the very large numbers of patients to be dealt with, so that the universal provision of centers is inevitably very expensive and, consistently with the maximum of efficiency, the arrangements must be planned with very strict regard to economy. To meet the fear of disclosure in Great Britain centers have as far as possible been established at general hospitals, so that the purpose of the patient's visit may be hidden. It has been found, however, that, where it has been impracticable to establish a center at a general hospital in a large town or city, the center has been well attended. In fact in 1919 the two largest records of attendances were at "*ad hoc*" centers, viz., the London Lock Hospital and the Nottingham Center. As further concessions to secrecy, patients' names are registered confidentially and thereafter they are known by numbers. To maintain attendances, reliance is placed on public propaganda and the

personal influence of the medical officers. Other measures directed to the same end are examination in decent privacy, arrangements to avoid undue waiting, and arrangements generally to meet the patients' convenience.

With regard to economy, the most important measure is the provision of premises which are convenient to the purpose. The temptation is to economize on first cost, and to provide premises which cause the staff unnecessary labor. In any clinic with a constantly increasing number of patients a time must come sooner or later when either the staff must be increased or efficiency will suffer. Obviously, that time will come sooner in an inconvenient than in a convenient clinic, and the additional running costs will quickly exceed the initial saving.

For the guidance of local authorities the Ministry of Health have approved the building of a model clinic at St. Thomas' Hospital and have also prepared type plans of clinics arranged as they think will prove most convenient. There are two type plans for huts or rooms of different sizes and I should like to explain the principles and method of running a center planned on these lines.

### Principles and Working Method

The plans printed herewith are arranged according to the type approved by the Ministry of Health for a sixty by thirty foot hut. It will be found that the principles of the arrangement shown in the type plan can often be adapted to existing buildings.

Male patients are handled as follows: On arrival, each patient reports at the inquiry window of the clerk's office. He may be (1) A new patient; (2) an old patient attending for anti-syphilitic treatment; (3) an old patient suffering from gonorrhea, and attending for examination by a medical officer; or (4) a gonorrheal case attending for irrigation. In the case of (1) the particulars are entered in the confidential register, the patient receives a ticket showing his identification number, a treatment card is made out for him, and he is directed to one of the examination

cubicles shown on the plan. The examination cubicle is reached by the patient via the passage shown on the plan, and no patient is permitted to enter the service and general room. On reaching the cubicle, the patient undresses sufficiently for a complete examination to be made, and is then examined by a medical officer. Each examination cubicle is closed by seven foot high partitions on three sides and is open on the fourth side. On this side, as shown in the plan, is a counter two feet eight inches high and one foot four inches broad which is upholstered so as to serve as an examination couch if required.<sup>1</sup>

Access by the medical officer to the cubicle is obtained by lifting a flap in the counter. The fourth side can be closed by a curtain if desired. The furniture of each cubicle consists of: (i) A small writing table on which are all stationery requirements; (ii) An instrument table on which are all the instruments for taking specimens and for making an ordinary examination; (iii) A double basin, portable wash-hand stand with perchlorid lotion above, in which to sterilize hands, and carbolic or lysol below for used instruments; and (iv) A rack holding four urine glasses.

The cubicle equipment is supplemented by equipment for special examinations and treatment, which is carried on trolleys standing in the service and general room. This supplementary equipment is grouped according to its purpose. Thus there are (i) A minor operation and dressing trolley, holding all the instruments, etc., required for dealing with a case of, e.g., bubo; (ii) A gonorrhea trolley containing all the instruments required for special examination of a case of gonorrhea, including urethroscope and rheostat, the latter working from an electric wall socket in a partition of each cubicle; and (iii) Mercurial injection, arsenobenzol and urine-testing trolleys.

If a medical officer requires special instruments other than those which form the normal equipment of an examination cubicle, he calls up the

\*Paper presented before the North European Conference on Venereal Diseases, Copenhagen, May 20-25, 1921.

1. The plan shows this counter set too far into the cubicle; it should be one foot nearer to the service room, i. e. the front edges of the counter should be in line with the ends of the cubicle partitions.



The plan of a venereal disease clinic of the type used by the Ministry of Health, and one that can readily be adapted to existing buildings.

appropriate trolley, which stands, while in use, outside the cubicle, alongside the counter or examination couch.

The result of these arrangements is that neither patient nor medical officer need leave the cubicle from beginning to end of the examination, except when the medical officer wishes to examine a microscopical specimen. This is done at the bench in the service and general room.

(b) In the case of patients attending for anti-syphilitic treatment the routine is as follows: (i) Anti-syphilitic injections are given at set hours, though new cases are injected at once. (ii) Each patient is first interviewed and examined in the doctor's room and receives a slip on which is written the dose to be injected. He is then sent to one of the examination cubicles, these being filled at the rate of four or five to each cubicle. (iii) Each patient passes his urine. (iv) All urines are tested by an orderly passing from cubicle to cubicle with a trolley carrying urine-testing apparatus. (v) A medical officer follows with a trolley holding the arsenobenzol injection syringes and gives the injections. For this purpose the patient sits in a chair within the cubicle and lays his arm out over the counter conveniently for the medical officer, who stands outside the cubicle. (vi) Another medical officer follows with the mercurial trolley. (vii) The cubicles empty in turn as the trolleys proceed along the line of cubicles, so that, by the time the last cubicle is finished, the first has filled with a fresh batch of patients, and so on until all have been treated.

(c) Patients attending for treatment for gonorrhea by the medical officer may require only a minor examination, in which case they are sent into the minor examination room adjoining the consulting room; or a more detailed examination, which is

carried out in one of the examination cubicles.

(d) Patients attending for irrigation receive a pink ticket on which are written the details of the irrigation required. The patient takes his pink ticket to one of the irrigation cubicles shown on the plan, and the orderly working at the bench in the service and general room supplies solution, nozzle, and, if required, assistance for the irrigation ordered. Each cubicle is fitted with hot and cold water so that, for most types of irrigation, the orderly need bring to the cubicle only the concentrated solution and the nozzle.<sup>2</sup>

### Care of Female Patients

If the premises are required for both male and female patients, it is necessary (1) To add to the furniture of each of the three examination cubicles on the right a gynecological examination chair, and (2) to curtain off about two feet of the back end of the cubicle in order to provide a small dressing space for the patient. When the patient is under examination on the chair, this curtain can be withdrawn to allow the operator more room.

It is an advantage, if the available space will allow, to make the cubicles eleven feet deep, rather than ten feet as shown in the plan, in order to allow for the additional space taken up by the examination chair and by the curtained-off dressing space at the back of the cubicle. If the counter is set one foot nearer to the service room than is shown on the plan, as already suggested, the free available depth is then seven feet eight inches to the dressing curtain, and nine feet eight inches if this curtain is withdrawn during an examination.

It will be seen that the main principles of the clinic are that

(i) The staff works on internal

<sup>2</sup> It has been found in practice that the counter shown in the irrigation cubicles on the type plan is not necessary.

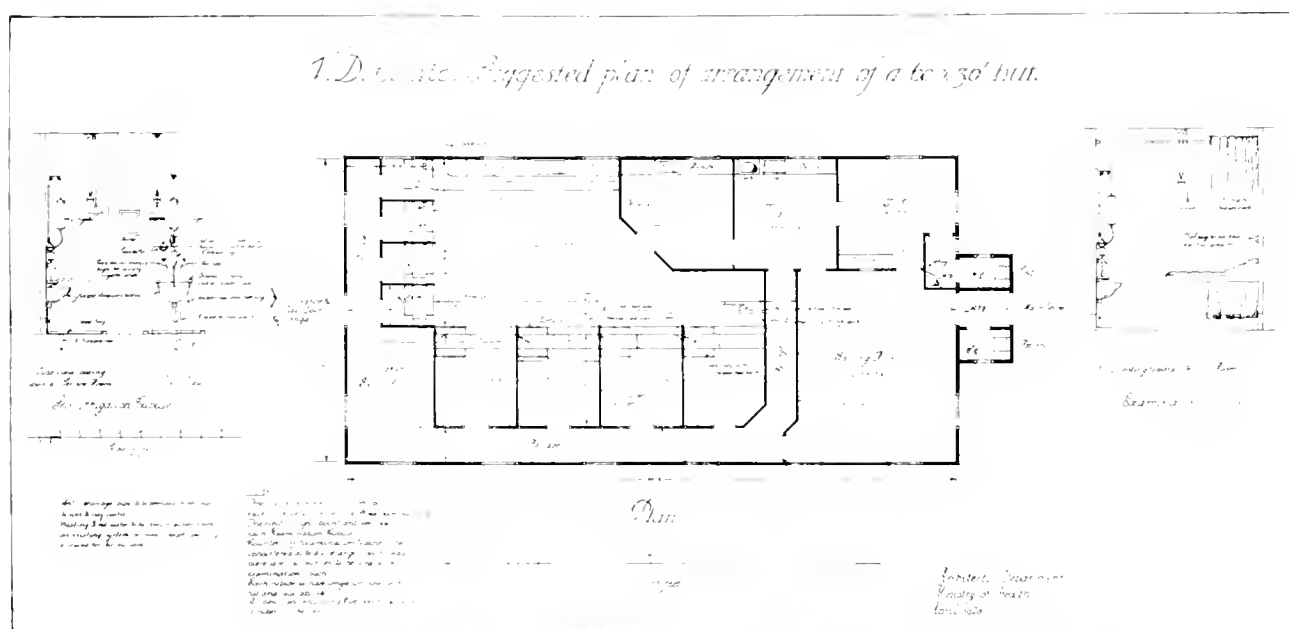
lines and has ready access to every part of the clinic. Thus anyone standing in the service and general room can see the greater part of the clinic, and the staff is almost entirely within view. Also, the distance to be walked by any member of the staff is comparatively small and his passage is unimpeded by any door.

(ii) The patients are examined and treated in reasonable privacy without thereby interfering with the working of the clinic. This and other advantages are secured by making the patients use the passage on the outside and never permitting them to enter the service and general room. It is easy, also, with this arrangement to give demonstrations to students since the patient lies on the counter and most of the class stand in the service and general room.

It is important that every clinic should be arranged so that (a) intermediate treatment of both sexes may proceed at the same time, or (b) that intermediate treatment of males may proceed during the hours of female sessions. In order to carry out this principle all that is necessary is to (1) put a door in the passage at the junction of the examination cubicle which adjoins the irrigation cubicle with the examination cubicle next to it. (2) Carry the partition between this examination cubicle and the next to the ceiling, or roof. (3) Curtain off the service and general room so as to divide the clinic into two, the portion on the left consisting of the irrigation cubicles and the last examination cubicle, and that on the right consisting of the remainder of the clinic. (4) Provide an additional sink on the bench in the service and general room to the left of the curtain just mentioned. In this way, during a female session, the door would be closed and the curtains drawn, so that males could enter at the door on the left of the plan, and be irrigated without being visible from the remainder of the clinic. Also, any male patient requiring a special examination during the hours of a female session could be seen in the last examination cubicle. (5) Provide an addition W.C., for male patients, at the left of the plan.

In the case of the 60 foot by 15 foot type plan the principles and method of working are the same as those described above.

I should like to add a few particulars regarding the recording of particulars. The Ministry of Health requires the particulars to be returned in Record Form V. R. 10. At St. Thomas' Hospital the arrangements



This plan is adapted to a sixty by thirty foot hut. Each cubicle is fully equipped for routine work, and special equipment is carried as needed on trolleys for the purpose so that neither patient nor medical officer need to leave the cubicle from the beginning to the end of the examination.

are such that the return can be made up at almost any time on these daily sheets. The patient's case-record is on cards.

### Social Worker Essential

Another feature which I consider of considerable importance in a treatment center is the social worker. At St. Thomas' Hospital every female patient first interviews a lady almoner who is a trained social worker. This lady, by sympathetic questioning, gathers information as to contacts and very often manages to secure the attendance of husband and children, so that one patient is often the end of a thread by which a whole group is brought under treatment. Similarly, in the children's department the attendance of the parents is secured through the children. In the male clinic such work is done by medical officers. It is a feature which is often overlooked by medical officers, who are content to deal only with the patients who happen to come to them.

There is a large and important class which is not provided for by so-called venereal clinics, and for which other arrangements must be made. That is the respectable mother of infected children. She will often refuse to attend a venereal disease clinic, but in a number of large towns treatment is provided at certain of the maternity and child welfare centers. That is a feature which we hope to develop considerably. The fact that the problem of venereal disease treatment is not met entirely by the establishment of one or more venereal dis-

case treatment centers in a town makes it desirable that the officer who conducts the main clinic should be on the staff of the medical officer of health. From this position he is able to view the venereal disease problem of his district from a wide standpoint and is able to co-ordinate all activities which concern the treatment of venereal disease, whether this is in the so-called venereal clinics, or in maternity and child welfare centers.

The arrangements for rural communities are much more difficult than for towns, owing to the scattered nature of the population. So far in England we have established a number of small centers at tuberculosis dispensaries, or in small hospitals in market towns, and these are visited by the county venereal disease officers on run by local practitioners under the supervision of the county officer. But we feel we have as yet only touched the fringe of the problem. We hope to extend our efforts on the lines of getting local practitioners to undergo courses of instruction and, after passing suitable tests, to undertake this treatment in their own consulting rooms. In this case the private consulting room of the country practitioner would be regarded for administrative purposes as a branch of some mother clinic whenever a venereal disease patient who desired treatment at the public expense was being treated there. The scheme has, however, not yet been drafted, and the above are merely the broad general lines on which I think that the services of country practitioners could be

utilized. The details will require considerable discussion before the scheme comes to fruition.

### Health Budget Items in Detroit

The Weekly Health Report of the Detroit Department of Health enumerates the expenditures for the fiscal year, 1921-22. The budget amounted to more than \$3,302,855.00, of which \$1,527,355.00 went for maintenance, and \$1,775,500.00 toward capital costs. The maintenance cost per capita based on a population of 1,070,000, amounts to \$1.43. The maintenance less hospitals is 78.4 cents per capita. Capital costs per capita amounts to \$1.66. The grand total cost per capita was \$3.09.

The largest item in the budget is for school inspection which includes physical examination, nursing inspection and the correction of nutritional defects; this amounts to \$172,960, or 16.2 cents per capita, 32 per cent of the medical service fund.

### Massachusetts Labor Commissioner Assistant a Woman

A law passed at the last session of the legislature provides that the assistant commissioner of the Department of Labor and Industries shall be a woman. The assistant commissioner is permitted by the act to inspect industrial establishments to determine compliance with the labor laws, and to make investigations concerning the conditions of employment of women and children.

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## The Ethics of Health and Medical Advertising

WITH unfailing regularity the much mooted question of the propriety of health and medical advertising rises to the surface and with almost equal precision it is submerged after the usual "ethical reasons" are offered. No one can doubt the wisdom of medical ethics which insures high professional standards, and the oath of Hippocrates will ever be remembered for its gospel of high idealism.

Conditions today are not comparable to those of centuries ago. Medicine is no longer considered a dark and occult science whose mysteries are uncovered to a select few. Public health has the enlightened interest and understanding of a much larger group who constantly seek new knowledge on health and disease. Because of the apparent failure of the legitimate teachers of health—the medical profession—to satisfy this demand, the general public has become an easy prey to the malicious and unscrupulous advertising of the medical quack and patent medicine fakir who are ready to grasp every opportunity to further their own selfish designs.

Assuming that the physician in private practice has no proper outlet for making known his services through the usual advertising mediums, it does not follow that the medical profession, through societies or group practice should not utilize publicity to keep the public informed of the progress of scientific medicine or the highly

specialized services which a clinic, hospital, or other medical group is prepared to render. Or if one insists on subduing this phase of medical advertising, why not emphasize important truths about such vital subjects as food, exercise, fresh air, and physical examination?

Medical groups do not hesitate to inaugurate extensive advertising campaigns to influence legislation affecting the various cults or their own practice, probably because of fear of professional encroachment as well as desire to protect the public. The fact is, there is a field for legitimate health and medical advertising and until this is recognized and satisfied by the medical profession, the craving public will continue to consume the vicious matter of the unscrupulous quacks who have so long monopolized the field.

## Philanthropic Doubt Should Temper Social Enthusiasm

FOR thirty years the philanthropists of America have indulged in a perfect "orgy of charitable activity. They have developed and expanded every form of humanitarian service common to the civilized nations, and have searched the world and their own imaginations for types of moral and physical ailment to which the philanthropies of old were oblivious, in order that they might still further improve society, and have even wider openings for the spread of their social enthusiasms," states Cornelia J. Cannon in the *Atlantic Monthly* for September, 1921, in an inquiry into the present status of American philanthropic endeavor. To be fully appreciated the article should be read *in toto*. We shall merely call attention to some of the most salient features of her discussion.

Her first inquiry is into the motive of the philanthropic impulse. This is not brotherly love nor friendship, but is an extremely complex impulse in which are mixed elements of kindly condescension, sympathetic fellow feeling, and ardent generosity. In many cases of applied philanthropies there is, however, unquestionably another motive, and that is to give back as a salve to the conscience some of the wealth which modern industry has permitted a few to accumulate at the expense of the many.

One of the conditions to which Mrs. Cannon calls attention is the lack of proper concept by the philanthropist of the state of mind of the person helped. Rarely is the human side of the person to be helped seriously enough considered by the philanthropist, even though the social worker, who is the technician on the job, is gradually coming to see the necessity of basing all work on the fundamental study of the reason for the work. "We



should regard as an impertinence, if done to us, the invasion of spiritual privacy that the more tolerant victims of misfortune accept as part of their disability. They act upon our advice if they must, they disregard it if they can, but they preserve untouched the inner citadel of their personality."

Despite the war and the fact that during the war the need for philanthropies was cut to a comparatively small proportion of its pre-war basis, Mrs. Cannon believes that the various organizations have failed to learn that some of them may not be needed. The intense individualism of each unit, jealous disregard of the virtues of one another, are often responsible for keeping alive institutions which have served their day. Perpetual endowments still exist and "give immortality to the normally transitory." More recent experience in some fields of social activity, however, show that certain organizations at least have begun to ask themselves the question, "Are we needed?" Although we agree with Mrs. Cannon in a general proposition, we feel that a statistical study would show that her thought has been forestalled by some organizations.

The next big question discussed by Mrs. Cannon concerns the essential nature of the work of the philanthropic societies. She doubts, as many before have doubted, whether most philanthropic societies are doing an essential work or whether they are just applying salve to sores. The application of palliatives, maintaining and patching up of society, does not get very far. What modern philanthropic effort needs is the same sort of application of psychological research that Parker applied to the study of economic conditions. We feel that until a profound application of psychological methods is made most philanthropy will be merely mending.

Now, if this condition of affairs is true, Mrs. Cannon naturally asks, "What is the cure?" As we see her argument, the cure lies in a fundamental change of method. Private philanthropy has use only as an experimental station for the development of methods which, when proved successful, should be turned over to the community.

Responsibility for evils of mankind should be shouldered by the whole community. The effort, time, and money now being spent by private agencies should be diverted to improvement of existing public agencies. Public officials, says Mrs. Cannon, are not as bad as they are painted and, if a closer contact were striven for, public control would result in better care. As examples of the shift from private to community interests, attention is called to the work on tuberculosis, legal aid for the poor, kindergartens, workmen's compensation acts, and the mothers' pension acts.

All the burdens formerly carried by private agencies have been shifted to the tax payer, in some instances at least with a vastly improved final result.

Naturally, a thoughtful and scholarly discussion such as that of Mrs. Cannon does not end here. The fundamental causes of distress must be sought out, studied, and prevented. Unemployment and illness are the two great causes of social disturbance requiring aid. The final remedy then is the prevention of poverty and illness. This job belongs to the community and not to the private individual.

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### The Rise and Fall of Umbilicology— A Note on Ultraspecialism

WHEN F. X. d'Illon, the famous umbilicologist, graduated from medical school he was simply Frank Dillon, the tall, black haired son of a switchman in the C and I railroad yards. He was not a particularly good student but he had an unusually convincing conversational line and was the Poker Medalist of his class.

Completing his internship, he early discovered that many names beginning with D are of French origin, so he stepped down his patronymic initial and inserted an apostrophe, emerging as d'Illon.

It was apparent, even to a mind less acute to the main chance than d'Illon's that the staid and plodding road to success in general medicine and surgery was weary, toilsome traveling and that quackery, while more immediately successful, ended inevitably in disaster. So he decided to take up a specialty.

Carefully scanning the field, he was at first dismayed to find that practically every anatomical region had been pre-empted and colonized and that the realms of special operative procedures and diagnostic manipulations were already well populated. His search however was not unavailing and for a time he wavered between diseases of the umbilicus and ingrowing toenail, finally choosing the former. Besides, umbilicologist sounded well and there was an excellent treatise on diseases of the umbilicus just off the press.

His next step was to present to the local medical society a modest paper on "The Relation of Umbilical Nystagmus to the Pampiniform-Plexus." This achieved an instantaneous hit, in fact, several of the older members said it was a scream. At any rate, he paid the postage on a thousand reprints, receiving in return a choice collection of form letter acknowledgements.

This emboldened him to treat the State Medical Society to "The Umbilicus and Freudism" and the Conference of County Health Officers listened pa-

tiently to "Hygiene of the Umbilicus,—a Plea for its Inclusion in Public School Curricula." He received a complimentary letter about this from the superintendent of the Naval Academy.

His connection with the Municipal Clinic made it possible to keep his well furnished waiting room fairly full during office hours and before long pay patients began to drift in. Several constipated society women were much relieved by his method of vibratory umbilical massage, combined with exercise and certain dietary changes. He filled a few off hours in the schedule of the medical college with lectures on his growing specialty. His "Degenerative Umbilicitis and Home Brew" was a classic.

Chinless apostles gathered round him and he founded the American Academy of Umbilicology, electing several unsuspecting foreigners to honorary and corresponding fellowships. The transactions were printed and a publisher was inveigled into issuing the Quarterly Journal of Umbilicology. Later this company failed.

The time was now ripe for an International Congress, with d'Illon as president and his assistant as secretary general. A wealthy manufacturer of patent surcingles financed the Congress. Unfortunately he passed to his reward the following year. The sanatorium authorities said it was general paresis but d'Illon always insisted that convergent umbilical strabismus carried him off.

A General Committee of One Hundred was formed and the appointments were sent out to a carefully selected list of prominent men. The secretaries of several sent in stereotyped acceptances. A hardshell Baptist wrote that although he was a conchologist he would serve anyway.

While the Congress did not have a large attendance, it certainly was a select gathering. The presidential address on "The Future of Umbilicology" was well received although many felt that perhaps the criticisms of the War Department for refusing to detail an umbilicologist to the General Staff, while merited, were harsh. Resolutions of condolence were passed over the death of the President of the Naval War College and a memorial was addressed to Congress urging the creation of a Department of Umbilicology with a seat in the Cabinet. The fees for the Congress almost paid for the reprint of d'Illon's address.

Two winters later while swimming from his steam yacht at Palm Beach the Father of Umbilicology was eaten by a cannibalist shark. Later his remains were found in the interior of the shark, which swam ashore and died, evidently of disgust. Thus rudely deprived of its leader, umbilicology retrograded. In fact, it is to a considerable degree being overshadowed by onyxizology under the brilliant fatherhood of d'Avis.

## Target Patterns for Accuracy in Sanitary Campaigns

THE "marvelous advance of sanitary science" is a phrase too frequently met, carrying with it a sort of finality and leaving the impression that, while there may be a few rough corners here and there to be chiseled off, the statue of Hygeia is rapidly nearing completion. Worst of all, it fosters a complacency in the average half-baked sanitarian and the ready acceptance of things merely on the basis of the printed word, without definite tangible proof. As a result, disease eradication campaigns have been frequently based on wholly inconclusive evidence.

For example, "Do not spit; to do so may spread disease," is a conservative statement, carefully modified by the subjunctive "may." The average mind reads this: "Spitting Spreads Sickness." But do we *know* that spitting ever spreads disease? If so, what diseases are known definitely to be disseminated by careless spitters?

Witness the propaganda literature regarding influenza and recall the masking of whole cities so that the inhabitants thereof should not infect one another by spray nozzle coughing. Is it proved that droplet infection ever caused influenza or that a dog muzzle which would keep the fingers out of the mouth might not have been quite as valuable a prophylactic instrument as the cheese-cloth mask? If sputum is the vector in so many diseases, why do so many enthusiastic adherents of the sputum commerce dogma pass over unnoticed the unsterilized eating utensils of the public restaurants? Do we *know* that careless spitting spreads tuberculosis and for that matter do we *know* that adults ever contract tuberculosis?

Have we any definite knowledge of how poliomyelitis is spread, i.e., have we the knowledge on which to carry out accurate defensive and offensive operations? How great is our definite accumulation of facts regarding the rôle of the carrier in meningitis spread? Do we know how to differentiate between virulent and avirulent meningococcus carriers?

As a matter of fact, are we not spending great sums on disinfections and house quarantines which are warranted only by presumptive evidence?

"Presumptive evidence," is that not the basis of a great deal of the sanitary work which is now going on? In other words are we not hunting disease with a blunderbuss instead of an accurately aimed rifle? And while we are scoring hits in this way are we not causing the tax payer unnecessary inconvenience and expense. If this is doubted by the reader, let him scan with an

open and inquiring mind the sanitary code and regulations of any city or state and let him ask himself how much of the material therein rests on well established fact and how much upon precedent and upon that ignorance which does more than is necessary because it must make a big target in order to strike a given point.

Doubtless, sanitary science can never achieve a mathematical precision—too many variants, too many human factors are involved in the equation of disease—but the control of typhoid and yellow fever are striking examples of the accuracy which can be reached. These warrant the hope that under the stimulus of a healthy scientific skepticism, the prevention and control of other diseases may be reduced to the least common denominator of actual fact.

In the meantime, it is a consolation to remember that the blunderbuss is one of the evolutionary phases toward the rifle. The point of the story is to recognize it as ye olde bell-mouthed smooth bore, and not to delude ourselves as to its accuracy or muzzle velocity. Of course, its use must continue until research produces a better weapon.

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### Some Unrecognized Industrial Danger Signals

THE general manager of a large manufacturing plant told this story: "The other day one of our steadiest mechanics shot himself. Apparently there wasn't a reason in the world; his family life was happy; he was not dissipated; he was a quiet, hard-working man. His foreman reported that he had only one peculiarity; no matter how good a piece of work he turned out, he always belittled it, comparing it with the jobs his father used to do, regretting the relative inferiority of his output. I talked the case over with our shop doctor and he told me a lot about 'sense of inferiority' which I understood, and threw in a lot more which I didn't.

"At any rate, it started me to thinking about several cases we had had in our plant. I recalled a man who had been driving a shop-mule,—a cracking good man with a record for reliability and carefulness. All at once, he began hitting things and had a series of small accidents, winding up with a grand smash-up which killed one man and injured several others pretty badly. We fired him, and he landed in an insane asylum, where he died about a year afterwards. Then there was a foreman in the woodworking plant, a good, sober man, full of energy, apparently a comer. He began getting rough with the men and at first I thought it was just his way of hurrying up production. Then he went over into the foundry and tried to tell our foreman molder

how to do things, got into a fight, and spent a week in the hospital. From that he went from bad to worse, got to drinking bootleg whisky, and we had to let him out. He died about eighteen months afterwards, crazy.

"I could go on and tell about a good many cases I've come across in our office force and sales staff cases which are clear enough to me now after twenty years of experience and a tip from our doctor. The point is this: why didn't I recognize what was going on at the time? Why was it necessary to let these people go on to destruction before somebody realized that something was wrong? Of course, we have been paying attention to these things only a few years, and, of course, if we had brought these cases to the dispensary the doctor would have discovered what was wrong; but we didn't send the men in because we had no idea that they were going wrong. There were danger signals sticking out all over them, but we didn't see them because we didn't know that the man who suddenly changes his ways or who becomes queer is a danger to himself and everybody in the plant.

"It strikes me that what we need is a little instruction along these lines. I don't want my foremen trained so that they could qualify as expert witnesses in a murder trial, but I wish somebody would describe the danger signals in garden-variety language that could be understood by those in close contact with the man on the job. If the foreman could understand that the skillful man who suddenly gets clumsy, the meek man who all at once becomes chesty, and the steady church-goer who takes to high-power swearing, should make a trip to the doctor, I believe our plant and its employees would be a good deal better off. They tell me, too, that a lot of these men may be salvaged; at any rate their chances of being scrapped would be much reduced."

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### Health Work Receives Impetus at Harvard

IN ITS Department of Industrial Hygiene and other laboratories Harvard has long afforded opportunities for study to those medical and health workers who felt the need of definite training for work in special fields, but the gift of \$1,785,000 recently made by the Rockefeller Foundation makes possible the establishment of a school for public health officers at Harvard with provision for additional aid should growth and development of the project require it.

Methods of teaching will be improved and facilities afforded whereby medical students, physicians, sanitary engineers, and other related specialists may have the special training which

will fit them for public health work, and means will be provided by which an adequate number of efficient men may be made available to fill the crying need of such workers. Education of the general public may also be expected to keep pace with improved health officials and that background of enlightened public opinion fostered which is the ultimate safeguard in matters of health administration.

Named in the order of their establishment, there are now ten schools in the United States for the training of public health officers: The University of Pennsylvania; Harvard University; Universities of Wisconsin, Michigan, and California; Detroit College of Medicine and Surgery; University and Bellevue Medical College; Yale Medical College; and Albany Medical College. The School of Hygiene and Public Health, established at Johns Hopkins Medical School in 1916, is the only other school of public health to receive the benefaction of the Rockefeller Foundation.

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THE dedication exercises of the Peking Union Medical College which took place on September 19, attended by a highly representative group of American men of science, afforded a dramatic contrast between the methods of preventive medicine of the western world and the traditional attitude of apathy and fatalism exhibited by the Chinese.

China from time immemorial has had practitioners in the healing arts, but they always rely upon mysticism, are subject to no legal restraint, and are required to present no credentials as to qualifications. Among a people content to be treated according to precepts dating back for centuries, the Medical Board of the Rockefeller Foundation has established laboratories for research, hospitals for medical service and training, and an out-patient department for the extension of service among the people.

While this is an enterprise calling for the utmost scientific optimism, it offers the only feasible chance of bringing a backward people into an inquiring state of mind. They cannot be expected to lift the veil and see for themselves the direct relation between cause and effect until they are taught to look forward instead of backward. This ocular demonstration in health work and scientific inquiry will serve humanity and, incidentally, the boundaries of science will be extended.

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THE Child Health Organization is responsible for the plan outlined in a government pamphlet which is to constitute the basis of work with school children which has as its object the training of the whole childhood of the Nation

not only in theories of health, but in health habits. If this plan is carried into effect, says the Bureau, school children will not stop with theory, but will actually become healthy.

The plan recognizes every agency for better health, but the onus of the work is placed on the teacher whose responsibility it is to train the child in health habits. The recommendations include thorough physical examination for every child at school entrance; individual health training through all the grades; each child weighed and measured regularly; height and weight records sent to parents regularly; health seeking made enjoyable by means of health clubs, rhymes, posters, songs, contests, plays; a definite time assigned to health teaching; plenty of exercise and play outdoors; cooperation between teacher, parents, community, school nurses, and doctors.

The children are furnished the "rules of the health game." The principle is sound, as it looks for its success to the interest aroused in the children themselves. The plan is flexible enough to be adapted to local needs, and positive results may be expected, looking toward the marked reduction of the high degree of physical disability that is now charged to the American child.

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A FOUNDATION is being sought in England to make permanent the extra-mural work of the universities which has been carried into industrial districts by means of specially trained professors who become residents of university centers successively over periods of four or five years. The Viscount Haldane, who speaks authoritatively in such matters, has checked the results and reports favorably on stabilizing the plan to make the work permanent.

The whole matter suggests that the adult population, particularly the laboring classes, whose education is in the majority of cases terminated around the age of fourteen years, can and should be inducted into the larger outlook and the sense of freedom which knowledge brings. Where the opportunity for continued work is extended, freshness and originality of ideas has marked their progress. Their leisure time has taken on a new significance and the restlessness and discontent of minds without resource have been observed to give way to new interests.

Surely such advantages need to be made available on a large scale, and systematic courses in industrial extension centers should replace the isolated popular lecture. If any appreciable part of the programs planned for the betterment of industrial working conditions is to take root, it must be accomplished through the enlightened self-interest of the men themselves.

# HEALTH IN INDUSTRY

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## Relationships of the Insurance Practitioner

The Specialty of Industrial Medicine Is the  
Product of Important Community Relationships.

By GEORGE E. TUCKER, M.D., MEDICAL DIRECTOR, AETNA LIFE INSURANCE COMPANY, HARTFORD, CONN.

**A**N INSURANCE practitioner may be defined as a physician, or surgeon, who devotes an appreciable part or all of his time to the care of injured industrial workers and is reimbursed for such services by one or more insurance companies.

The adoption of workmen's compensation insurance laws by the several states created a new field for specialization, and the so-called insurance practitioner is undertaking to fit himself to practice successfully in this field of medicine and surgery. The development of this specialty is the direct outcome of a study of the experience of approximately ten years administration of medical and hospital benefits under these laws.

### A New Specialization

The unsatisfactory results that have been obtained from the indiscriminate reference of cases of industrial injury to general practitioners made it necessary to adopt administrative measures that would in part overcome this practice.

Likewise, the experience of well organized self-insurers clearly showed that physicians in industry provided intelligent care of injured workers through utilization of those superior medical and hospital facilities that their training and investigation enabled them to select.

Prior to 1911, or during the years that industrial injuries were looked upon as an unpreventable by-product of industrial activity, a part of the

*Insurance as a method of distributing the burden of sickness and disability has gradually replaced the indiscriminate handling in free clinics of cases involving industrial conditions by the special clinic with precisely adapted methods.*

*Specific records, correlated observation, concentration and volume of practice led to the development of specially trained men, and the best practice in this field constitutes a dignified specialty in which earnest adherence to the fundamental rules of professional ethics will allay unfair competition and tend to still incidious criticism.*

burden of the cost of repair and replacement of the injured in industry was distributed to the community through its maintenance of free clinics and dispensaries, patronized so largely by industrial workers.

These institutions were conducted as charitable enterprises and often utilized by colleges for teaching purposes. Their staffs were carefully selected and the cases were intelligently distributed among the several groups of specialists. Cases of imbedded foreign body in the eye were not treated by internists; patients with palmar cellulitis did not receive expectant treatment from obstetricians.

So-called "clinic" patients enjoyed such obviously superior service that the oft repeated statement that "only the very rich and the very poor have the best medical and surgical attention available," was demonstrably true.

With the advent of the new social relief legislation and its provisions for the more equitable distribution of the burden of cost of industrial injuries, came fees for both physicians and hospitals to care for that group of industrial cases that had previously been dependent upon the services of the free clinic.

Likewise, fees became available for treating minor injuries of the type that had previously been subjected to home remedies or to the unskilled care of the voluntary first-aiders.

Legislators early contemplated and often publicly stated that workmen's compensation laws were designed for the benefit of the working men and women whose occupations brought them within the scope of such laws. Later, with somewhat less emphasis and more hesitancy, they argued that such laws would prove to be of benefit to employers and to the community. Never, to my knowledge, have legislators generally urged the passage of a compensation act on the ground that it was intended to be a measure designed for the benefit of the medical profession. On the other hand, no discrimination was intended; so, if the medical profession received fees neither more nor less than those

they previously enjoyed from the same class of patients under the provisions and administration of a compensation act, the charge of unfair or unjust discrimination could not be successfully sustained.

The apparent interest of the rank and file of the medical profession in social relief legislation or in those to be relieved came too late to exert any modifying influence on its provisions, and even during more recent years the occasional outburst of professional protest has been directed toward raising the maximum fees and providing free choice of physicians, rather than toward bringing about the passage of amendments that would have the effect of reducing accident frequency and accident costs.

Addressing my remarks to physicians in industry, it is unnecessary to point out either the advantage or the need for the careful and intelligent distribution of injured workers to well selected medical attendants.

### A Question of Efficiency

Your greatest service to your employers and your industries, in connection with the proper handling of the industrially injured, results from the kind of treatment you provide through yourselves or your associated staff of doctors and nurses and the supplemental assistance you obtain from available specialists in their several fields.

As a rule, general surgeons make a mess of the treatment of flat feet, and orthopedists obtain equally poor results when they undertake the radical cure for hernia, while general practitioners with limited knowledge of orthopedies and surgery obtain less satisfactory results than either.

Insurance practitioners are engaged in several varieties of work. There are those who confine their activities to problems of administration; others limit their practice to physical examination of workers and treatment of minor injuries; while still others are specialists in the several recognized specialties.

Physicians engaged in administrative work serve insurance companies in the capacity of medical directors or medical referees and are assigned to duty in territories where the volume of business justifies their employment in this branch of service. Their contact with the community and with industry is largely in an advisory capacity, giving attention to accident prevention, reduction of time lost from industrial injuries and the solution of those problems in industry that have to do with occupational disease hazards.

The physician or surgeon who is undertaking to limit his general practice and confine his activities to the care of the industrially injured is in most instances paid for part or all of his time on a per capita fee basis, and his successful bid for this business is based upon the superior methods which he employs and the administrative facilities that he maintains.

The average physician dislikes keeping records and giving attention to those features of so-called "routine" that are so essential in the proper conduct of insurance business, and the average physician's office is poorly equipped to carry on this work. Likewise, the community practitioner hesitates to involve himself in the overhead expense incident to employing an assistant in order that surgical services may become readily available during any hour of the day or night.

The proper treatment of injured workers contemplates twenty-four hour service and the maintenance of unusual consultation hours becomes necessary in order to meet the demand of both time and piece workers who hesitate to lose the income incident to being away from work to receive treatment during the regular office hours.

A concentration of this particular type of work permits the insurance practitioner to maintain facilities and to purchase equipment for proper treatment that is not found in the usual doctor's office, and since this service confers a benefit upon that portion of the community entitled to receive it, and since the reduced lost time increases production and lowers cost not only to industry but to insuring companies, the physician who is competent and desirous of undertaking this work is worthy of every encouragement that concentration of business and adequate pay affords.

In this field of specialization there are a great many orthopedists, ophthalmologists, and physiotherapists who devote practically all of their time to the care of injured workers for insurance companies, and such practice has proved to be not only lucrative, but highly satisfactory from the professional standpoint, and just so long as their services are founded on a basis that will insure them a reasonable return for the amount and character of services rendered, their economic relationship to their patients and to the medical profession at large does not differ from that of specialists who only incidentally treat this same class of persons.

The possible development of a system of contract practice, with all of its attending evils, has been most studiously avoided both by the best insurance companies, and the more desirable practitioners. Large railroad companies, manufacturing enterprises, and the United States Government have long employed physicians on the basis of whole or part time employment, therefore, insurance companies have followed a well established precedent when they adopted similar plans that were no longer experimental.

Small enterprises are not prepared to maintain medical facilities comparable to those found in the larger better organized industries, and since there are 7,036,336 workers in the United States employed by manufacturing concerns, and only 648 plants having more than one thousand employees, to reach that very important and very large number, facilities established by insurance companies to meet the needs of the small groups serve a very useful and desirable purpose.

In the same manner, emergency hospitals with full time attendants, located so as to provide treatment for injured employees of small plants, fill a need that is seldom met by cooperative effort, except through the agency of insurance companies.

If we would encourage immediate and skilled treatment for large numbers of injured workers and a minimum disability with a minimum loss of time, organized first aid facilities, proper referring of major injuries, and concentration of work in centrally located establishments must supersede the unorganized "catch-as-catch-can" system that was so universally in vogue prior to the advent of the physician in industry and the insurance practitioner.

The first intelligent effort that was made to record the result of the application of medical and surgical skill as it affects functional recovery and occupational earning power has followed the establishment of medical departments in industry and a study of workmen's compensation cases.

It is much easier to determine who in the community obtains the best results than it is to learn how such results are accomplished. As anomalous as it may seem to the uninitiated, the surgeon who enjoys the best reputation and the largest income, or the most lucrative practice, does not uniformly bring about the rehabilitation of the worker and his return to normal earning power in the least time.



How and when to immobilize a fracture may assume less importance than the question as to how long immobilization should be permitted to continue. The determination as to when a worker is prepared to return to work and a knowledge of the industry that enables the attending physician to determine in what occupation he may safely engage is oftentimes quite as much a part of successful treatment as is the choice of therapeutic methods to be employed.

A knowledge of the relationship of certain nationality groups to suggestions, of their prejudices, and of their tendency to obey or disobey instructions, is indispensable to the medical attendant if he would practice successfully among these groups. Contact with only the occasional case does not permit of the development of this information, whereas, concentration and volume accords this desirable opportunity.

Both insurance and industrial practice permit of observation and the development of technical skill not unlike that obtained by surgeons who enjoy operating in large clinics in connection with institutional teaching.

To learn to so describe an injury as to convey an accurate picture to a claim department and to the administrative bodies of industrial accident commissions becomes a necessary part of the insurance practitioner's education. He cannot be satisfied with a report that merely states that "a foreign body was found in the eye." To him the term "laceration on the back of the hand" does not indicate the seriousness of the wound.

The use of indefinite terms and the submission of incomplete and inaccurate information constitutes a source of annoyance that can only be overcome by education of very large numbers of physicians who undertake the care of compensation cases, and the success that has attended the efforts that have been made by various agencies during the last ten years has not been encouraging. Repeated requests to physicians for additional information are not usually well received, and hypersensitiveness is not a trait unknown to members of the medical profession.

Insurance companies are not trying to develop a group of physicians in their own employ at the expense of the advancement of the private practitioners, but they are undertaking to make the field of insurance work so inviting as to attract high grade practitioners to it, so that specialization in this type of practice will be equally

beneficial to industry, industrial workers, the community, insurance companies, and the private practitioners who follow this work.

Misunderstandings and jealousies will undoubtedly accompany the insurance practitioners' efforts to be successful, but earnest adherence on their part to the fundamental rules of ethics governing the profession and

an equal understanding and effort on the part of administrative representatives of insurance companies will ultimately develop that confidence of all parties concerned, which will permit of the cultivation of an amicable arrangement that will receive the hearty approbation of the medical profession, the worker, industry and the community.

## ASSOCIATION LETTER

BY WILLIAM ALFRED SAWYER, SECRETARY

THE meeting of the A. A. I. P. and S. in conjunction with the Health Service Section of the National Safety Council was held in Boston, September 29th and 30th. The papers presented were of a high order and well received by a goodly attendance. Of particular merit were the papers on "The Problem of Heart Diseases in Industrial Workers," by Dr. Paul White, with its discussion; "Infection of Industrial Injuries," by Dr. Frederick J. Cotton, with its discussion; and on "Injuries and Diseases giving Symptoms Especially Referable to the Lumbar Spine," by Dr. C. L. Bradford of Pittsburgh and Dr. Robert Osgood of Boston.

The Health Service Section passed a resolution to the effect that the papers presented before the Medical Section should be distributed among the other sections in order that material presented should reach a much larger percentage of the members attending the National Safety Council meeting. Ruling will be made on this in executive session of the National Safety Council.

A meeting of the Board of Directors for the American Association of Industrial Physicians and Surgeons was held in Boston Thursday evening, at the Copley-Plaza Hotel, with the following officers and directors in attendance: Doctors C. E. Ford, C. F. N. Schram, L. A. Shoudy, R. E. Elliott, William Alfred Sawyer, G. H. McKinstry, C. H. Watson, and P. H. Hourigam.

The Board was in session for three hours and took up for discussion many matters of importance to the future of the Association, chief of which were plans for an increased membership campaign. Plans for this membership drive will be published and every effort made to enlist the cooperation of everyone now connected with the Association.

The Board of Directors voted to hold the next annual meeting at St.

Louis, Monday and Tuesday, May 22 and 23, 1922, the first two days of the meeting of the American Medical Association. Already some thought is being given to a program for these sessions. Dr. R. C. Quinby has been chosen to succeed Dr. Lauffer as director.

At the meeting of the Board of Directors the following committees were appointed:

Committee for the Coordination and Standardization of First Aid Methods to be Applied in Industry: Dr. L. A. Shoudy, Chairman, Dr. A. W. Colcord, Dr. F. L. Rector.

Committee to Evolve a Practical Scheme for Supplying Health Service in Small Plants: Dr. C. F. N. Schram, Dr. C. D. Selby, Dr. A. E. Shipley.

It is with pleasure that we introduce to the membership the following new members:

Dr. William Hall Bunn, National Lamp Works, Youngstown, O.

Dr. Frank C. Henry, Perth Amboy Hospital, Perth Amboy, N. J.

Dr. James F. Sullivan, National Lamp Works, Pawtucket, R. I.

Dr. Wm. F. Lyon, National Harvester Company, Akron, O.

Dr. Fred H. Harrison, 20 North Lee Street, Cumberland, Md.

Dr. Geo. Hoyt Bigelow, Antioch College, Yellow Springs, O.

Dr. Fred S. Caverly, 157 Passaic Street, Passaic, N. J.

Dr. A. O. Buck, Singer Manufacturing Company, Elizabeth, N. J.

Dr. D. L. Lynch, New England Telephone and Telegraph Company, Boston, Mass.

The tentative program for the industrial Hygiene Section of the American Public Health Association, which holds its annual meeting in New York City, November 14 to 18. All the members of the A. A. I. P. and S. who possibly can are urged to attend this convention as many points of interest and help to the industrial physician will be discussed. A series of valuable addresses are offered on industrial medicine.

# The Industrial Physician and the Hospital

## Recorded Observation and Correlated Effort Afford a Fertile Field for the Research Worker

BY HARRY LINENTHAL, M.D., PHYSICIAN TO OUT-PATIENTS, MASSACHUSETTS GENERAL HOSPITAL; INSTRUCTOR IN INDUSTRIAL MEDICINE, MEDICAL SCHOOL OF HARVARD UNIVERSITY, BOSTON.

THE opportunities for cooperation between the industrial physician and the hospital will depend in a large measure upon the individual physician and the scope of his work. The work of physicians in industry is greatly varied and may consist of from the administering surgical first aid in cases of industrial accidents to that of being the administrative head of a large health organization in an industrial plant. The beginning of the industrial physician's work was that of rendering first aid in injuries resulting from industrial accidents. From this beginning the work gradually has developed in many instances so that it now includes medical dispensary service to all employees; the detection of diseases in their incipency, whether the diseases be industrial in origin or not; the physical examination of those applying for employment so that the fitness of the employee for the particular job may be determined, thus rejecting the unfit before they start; periodical examination of employees in hazardous processes, to detect the early occurrence of industrial diseases; the supervision of the general sanitation of the plant; and the recommendation of protective devices against industrial hazards and accidents. The industrial physician is often required to give opinions on all questions that may arise relating to industrial hygiene or other health relations in industry.

### Variation in Standards

Varied as is the work of the individual physician in industry we find an equally great variation in the standards and organization of different hospitals. The hospitals whose cooperation we shall consider of value to the industrial physician are those that have organized departments in the various specialties and are equipped with chemical, bacteriologic, pathologic, x-ray and medical laboratories. It is evident that the utilization of the diagnostic facilities of the hospital will depend upon the scope of the physician's work, the special hazards that may exist in the given industry, and the special problems that present themselves in his work.

*Only when complete cooperation obtains between the industrial physician and the hospital on the one hand and the diagnostic group on the other will adequate service be rendered by industrial medicine.*

*Such affiliation will give great impetus to the important study of industrial toxicology. There will also result a scientific correlation between occupational conditions and disease in general.*

*Where interest has centered on specific industrial problems, improvement has invariably followed. The extension of such interest and the intelligent analysis of statistical studies will further illuminate the whole subject and make for better practice.*

I shall touch but briefly upon the relations between the industrial physician and the hospital in the treatment of industrial accidents. The cooperation which may be required in this field is that of x-ray diagnosis. This, of course, can be had at the hospital but can also be obtained with ease elsewhere inasmuch as many industrial plants have their own x-ray departments, or private x-ray laboratories are available almost anywhere.

In this particular field the industrial physician is likely to contribute to the general surgeon methods and devices that will be time saving and reduce the period of incapacity. The hospital surgeon in dealing with injury is apt to regard the technical surgical problem involved and the ultimate perfect result. The time element does not enter as strongly as it should into his treatment. To the industrial surgeon, on the other hand, the economic question is of paramount importance. He is also striving for the method that will render the best ultimate result, but his constant concern is to return the man to his job in the shortest possible time. With this emphasis on the time saving problem the industrial surgeon will often develop methods and appliances

to be used in certain injuries which will be distinctly advantageous in shortening the period of disability.

### Group Diagnosis in Industry

But the relation between hospital and industrial physician should be far more intimate and varied in the diagnosis and treatment of medical conditions, whether these are the results of industrial hazards or other causes. There are, as I have mentioned, many industrial plants in this country where dispensary service is offered to all the employees, whether the state of ill health is the result of the work or not. The industrial physician is thus often called upon to examine the worker and make a diagnosis even if he has nothing to do with the further treatment of the case. Instances where the industry has undertaken the care of the health of its employees outside of the plant, giving them treatment at their homes, if such exist at all, are rare. It is not at all improbable that this will be the line along which future development to preserve the health of the worker is to take place. Before consulting outside physicians, however, the worker comes to consult the physician of the plant. In many instances diagnosis of the condition by the industrial physician with his necessarily limited facilities is impossible. Laboratory examinations may have to be made and the opinions of several experts in special fields may be required. Clearly the worker is not in a position to pay for such services, yet such expert study may be absolutely necessary to reach a correct diagnosis in the given case. The charitable clinic in a general hospital with all its facilities in modern diagnostic methods, with its staff of experts in the various specialties, should be at the service of the industrial physician in the diagnosis, and, if necessary, in the treatment of the case. The relation between the industrial physician and hospital is in such instances precisely that of the private physicians practicing among the poorer classes in the community who constantly send their cases to the hospital for expert study and opinion for which the patient is unable to pay; or it is the

relation between the practising physician and the consultation clinic to which he sends his cases who are able to pay a moderate fee to obtain a group diagnosis.

The physician employed in industries in which there are special hazards liable to produce specific industrial diseases can derive great help from the facilities existing in the hospital for study of those cases suspected to be suffering from those diseases in their incipency, inasmuch as in many instances considerable laboratory work and other special examinations are essential in their detection. The special facilities of the hospital for the investigation of specific occupational diseases can thus be made available to the industrial physician.

The gain from such cooperation will not be entirely on the part of the industrial physician but will also be of decided advantage to the hospital physician, for he will be brought in contact with the wide field of industrial health relations and with the broad social aspects of medicine. It is of course needless to call attention to the evident advantage to the patient from such cooperation who will get the benefit of all the modern methods of investigation in the diagnosis and treatment of his case.

### Specific Industrial Studies

To have such cooperation between industry and hospital most effective it is presupposed that the hospital have a special interest in conditions of employment and industrial hazards, in other words that the hospital have a special clinic with physicians in charge who are interested in health problems in industry and in the possible etiologic relations of various health hazards.

In addition to the mutual advantages to the physician and hospital already mentioned, which will result from their cooperation, it is important to call attention to another field in which I believe the industrial physician is going to be of great help to the hospital. I refer to the further research of the effects of industry on health, which is one of the chief functions of the work of an industrial clinic in a general hospital.

Our lack of knowledge of the general effects of industry on health is due to our inaccurate records and inexact tabulations. It is true we have a good deal of definite knowledge of the specific industrial diseases, the occupational intoxications and infections, we are also able to recognize the etiologic value of such industrial

hazards as dust and fumes, postural strains, etc.

But what the effects are of certain occupations on health, the frequency of morbidity and mortality from certain common diseases among certain groups of operatives; the effects of the general stress of industry, the speeding up, the monotony, the general fatigue effects we know but very little.

Such additional knowledge is, I believe, to be obtained from the analysis of large numbers of records with a view of establishing a correlation between the occupations and the diseases.

It is only the tabulation of vast numbers of cases that will permit deductions as to the relative frequency of certain diseases among certain groups of workers.

That valuable information can be gained by such statistical studies and that facts of importance can be brought out which do not become obvious even in the careful handling and study of the individual case is illustrated in an analysis of even as small a number as 10,360 admissions of persons in industry to the Out-Patient Department of the Massachusetts General Hospital. Just to cite several instances:

In the 10,360 cases tabulated the diagnosis of gastric ulcer was made 79 times; 26 of these, or more than 34 per cent, occurred among workers in candy factories. The diagnosis of gallstones was made 46 times, 26 of these, or more than 56 per cent, occurred among the same group of workers. Yet the entire number of candy workers was 205, or less than 2 per cent of the number of admissions.

The above is the most striking instance of the analysis which has not yet been completed. There are other instances while less striking are nevertheless very significant. Thus for instance while only 1 per cent of admissions were engaged in agricultural pursuits, that group furnished 5.6 per cent of all cases of bronchial asthma. The clothing industry furnished only 2.5 per cent of admissions yet they furnished 8 per cent of the acute respiratory infections.

It can thus be seen that the analysis of even so small a number of cases gives figures which are of extreme interest. The careful correlation between occupation and morbidity and mortality figures are full of promise for the increase of our knowledge of the effects of occupation on health. Where is the research worker to look for his data?

The modern tendencies of development of industrial medicine point very definitely to the fact that the medical organization in industry is going to develop and play a far greater part in the future in the care and treatment of the employees, both within and without the industrial plant. In other words, industry, if we interpret the present trend of things correctly, will assume a greater and greater activity in the care of the health of the employees. This is a fact which the medical profession should realize inasmuch as such a development will affect not only the size of the hospital clinic but the extent of private practice, particularly of those physicians who practice in industrial communities. Desirable or not as such a development may be from the standpoint of the physician, it is not likely that the development in industry will be influenced or checked in any way by the private interests of the physician.

### The Present Trend

With such a development of medicine in industry the hospital clientele of persons engaged in industry will gradually become smaller and smaller and will not be sufficient for statistical analysis. Every large plant with a well established medical organization will possess accurate data as to its own force of employees, but there will be no central agency which will be able to combine the data and experience of all the plants.

It seems to me that the Industrial Clinic because of its special interest in research in industrial problems and because of its intimate contact with industrial physicians through cooperation along the lines indicated above can well serve as a center where the experiences of all physicians in industrial plants can be collected and progress made in our knowledge of the effects of industry on health.

His own experience with certain groups of workers will be the great contribution the industrial physician can make to the hospital.

I may note in conclusion that we have not discussed here the basis upon which the cooperation between the industrial physician and the hospital is to take place. If the hospital, for instance, is to help the industrial physician either in diagnosis or treatment of industrial diseases or accidents, on what basis should such assistance be rendered? How is the hospital or the hospital physician to be compensated for such work? Clearly some equitable adjustment

will have to be arranged in such cases to preserve friendly cooperation and to avoid the antagonism of the pro-

fession in general. The abuse of hospital facilities and service of hospital physicians by industry will have

to be guarded against. Some equitable adjustment ought not to offer any special difficulty.

# Our False Standards of Disability in Industry

## Collaboration Is Needed to Bring Together the Specific Findings in Industrial Medicine

BY W. IRVING CLARK, M.D., NORTON COMPANY, WORCESTER, MASS.

PHYSICAL examinations were introduced into industry in 1909. By 1913 many large factories had adopted them. The object of the physical examination from the first was to eliminate from the factory those whose physical or mental defects rendered them a danger to themselves, others, or property, and to place those defectives who did not come in this class at work for which they were physically competent. When physical examinations were first instituted there was no previous experience as a basis upon which to estimate the probable disability for work caused by any given defect.

### Empirical Standards

Industrial physicians were obliged to base their ideas upon their observations in private or hospital practice, and upon the standards set by life insurance companies in their examinations. The latter played a strong part in shaping not only the type of examination but the significance of the findings. In short, those defects which cause question or rejection for life insurance, and those which appeared in a general hospital service, requiring repair, were considered to be the physical defects which required attention and which, if severe, should be the cause of rejection.

In 1915 the Conference Board of Physicians in Industry, representing twenty-four large factories, established for itself examination standards in reference to physical defects necessitating special attention and defining different degrees of these defects. These defects placed a worker as sub-standard and the following rule was adopted:

All second degree defects should be considered as sub-standard according to following schedule: All groups sub-standard for hernia (second degree or more); varicosities (second degree or more); flat feet (second degree or more); varicocele (second degree or more); hearing (second degree or more); vision (second degree or more)

Also the following: Arteriosclerosis; endocarditis; tuberculosis;

*The scientific solution of the social problems of industry rests largely upon due consideration of physiological conditions as affecting the workmen.*

*While the basic physical requirements of the individual worker under specific conditions are fairly well understood, this knowledge has not generally been put to work.*

*Since health and precise adaptation govern both intensive production and the comfort of the workman, industrial medicine must become more precise and its service extended to all the domains of industry.*

bronchitis (chronic); emphysema (chronic); asthma (chronic).

This classification has been used by members of the board up to date.

As a result of physical examinations, in many factories there has been a rather high percentage of defects classed severe enough to reject. Thus Mock in 1918 investigated ten large industries employing more than one hundred thousand regular employees and found that out of 118,900 applicants examined in one year 55.6 per cent had no disabilities of any moment, 34.7 per cent has disabilities that did not interfere with selected work and 9.7 per cent were rejected for work because of disabilities. In general 10 per cent of those examined failed to come up to the minimum standard.

The Secretary of the Conference Board of Physicians in Industry in the summer of 1920 made a very comprehensive investigation of the extent and methods used in making physical examinations of industrial workers. Reports were obtained from thirty-four plants, representing fifteen separate industries and a working force of 410,106. It was found that 4.6 per cent were rejected because of physical disability and, if those are

excluded who were rejected for special work, such as train men, crane men, and inspectors, in whom defective hearing was the cause of rejection, the average proportion of rejection was only 2.8 per cent.

In the author's clinic the rejections were 3.5 per cent for 1916 and 3.7 per cent for 1920, showing how stable the rejection percentage remains. Fifty per cent of those rejected are men who have severe eye defects. This makes it unsafe for them to go into a factory where there is abrasive dust because of the irritation and possible danger to their already impaired vision. Thus, if this special defect is omitted, 1.8 per cent only of the applicants would have been rejected. These figures are brought to your attention in order to show the present tendency to reduce the standards of rejection and to suggest that experience goes to show that in every large factory men with almost any type of defect can be placed at work. This is especially important in defects which have been previously considered a danger.

It is not at all sure, however, that we are paying enough attention to certain defects which have hitherto been overlooked and whose importance is just beginning to be recognized. The only real test is experience and it is difficult to get this concisely from a group large enough to be of value. Having no compilation of figures to which to refer, the writer will give the experience of his own clinic.

### Defects Which Are Dangerous

*Hernia.*—We have not found already existing hernia an industrial defect leading to loss of time, operation, or compensation. Every case of hernia which has given trouble has been one which occurred during the working period in the factory and did not exist prior to hiring. For many years we have had from twenty-five to thirty men with old hernias, mostly fourth and fifth degree, inguinal type, doing work of all kinds.

The majority of these men wear trusses, but a number wear such supports irregularly. During the past ten years there has been but one case of strangulation among the workers, and that occurred outside of working hours. From this experience the author has come to believe that a hernia which has existed many years, which is retained by a truss, and which is recognized by the worker, is no bar to employment in any part of the factory, provided that work of a similar nature has been done by the applicant up to a week prior to hiring.

**Varicosities:** These are undoubtedly troublesome but seldom cause loss of time. Even varicose ulcers, when treated, do not prevent a man from doing almost any type of factory work. In fact, from the man's point of view, the accompanying eczema is much more of an annoyance than the varicose veins or even the ulcer. From a medical point of view the patient will have far less trouble working under medical supervision with proper treatment in the factory than working elsewhere. Only twelve cases in four years have applied for treatment.

**Flat Foot.**—This is again a much over-rated condition. The number of men having painful or weak feet is small compared to the number having flat arches. In our experience a high arch has more frequently given trouble than a low one. However, flat foot may in some cases be a factor in back strain and for this reason is of interest. We have encountered sixty-seven cases in four years.

**Varicocele.**—This condition has never given any trouble in our experience.

**Hearing.**—Deafness, while it increases slightly the general risk of the individual, and makes explanations of work more difficult, is no bar to employment except in special departments. Many foremen at Norton Company prefer men who are deaf as they attend to business.

**Vision.**—As already stated, there is a distinct eye hazard in the abrasive industry and men with badly defective vision should not be employed. This, however, is not to be construed as applying to other types of industry.

**Arteriosclerosis.**—The importance of this defect depends on its etiology and the accompanying changes in other organs. At Norton Company during the past four years there have occurred two cases of cerebral hemorrhage among workers. Arteriosele-

rosis without abnormally high blood pressure probably causes no trouble unless of syphilitic origin; that is, under medical supervision these cases are able to do good work for years without undue absenteeism because of sickness.

**Endocarditis.**—In the great majority of cases, endocarditis, except when compensation is lost, is no bar to employment. Returning to the author's clinic, in 1920 the employees numbered approximately four thousand. The number of possibly defective hearts, that is, hearts having a definite murmur, probably organic, under study was 118. Of these ten lost time because of heart trouble. During 1918 and 1919 the total number of cases of heart trouble, applying at shop clinic for advice other than when sent for, was ten. During the same years fourteen lost time because of heart conditions. During the four-year period 1916 to 1919, ninety-two men applied for treatment giving "heart" as the reason. During the same period 14,502 applied for treatment because of respiratory disease. The functional power of the heart muscle for work should be the deciding factor and this can be rapidly and fairly well determined by simple tests.

**Tuberculosis.**—Active tuberculosis has, of course, no place in the factory. Its presence should bar employment. When it appears among members of the working force, it should be isolated and the worker sent to a sanatorium. Here, again, the number of cases in the author's experience is small. During the year 1920, three applicants were rejected for tuberculosis and five cases were discovered among the employees, the force then numbering four thousand. Chronic bronchitis, emphysema and asthma may or may not cause trouble depending on the type of work available. At Norton Company they are a poor risk in many departments because of the dusty nature of the business. Fifty-nine cases applied for treatment in four years.

We have now considered all the conditions listed by the Conference Board as sub-standard and note that on the whole they do not present a very large number of cases. The time loss occasioned by these defective conditions is interesting. In 1920 this was as follows:

	No. of Cases Applying for Treat.	Days Lost
Hernia (developing during work) . . . .	8	201
Hernia (preexisting) . .	0	None
Varicose Veins . . . . .	0	None

	No. of Cases Applying for Treat	Days Lost
Flat Foot . . . . .	15	125
Varicocele . . . . .	0	None
Deafness . . . . .	0	None
Vision . . . . .	0	None
Arteriosclerosis . . . .	0	None
Heart . . . . .	10	241
Tuberculosis . . . . .	5	136

Excluding the hernia cases, in none of which the hernia was present on admission, we find the total number of defects which caused loss of time was thirty and the number of days lost 502. This appears small as compared with the time lost from sickness, which was 11,648 days for the same period.

There are three partly preventable conditions which caused the loss of considerable time. These are:

	No. of Cases	Days Lost
Back Strain . . . . .	22	335
Rheumatism . . . . .	34	348
Tonsillitis . . . . .	46	328
	102	1,011

Back strain is important because of its frequency and the large number of cases in which there is arthritis of the spine. In the presence of arthritis a very slight strain produces rather severe disability.

Rheumatism is frequently present when the worker is hired and is not detected until he comes to the shop dispensary complaining of pain. A physical examination which does not include the joints has little value in properly placing and guarding rheumatic cases. Rheumatic cases also constitute a risk from the point of view of injury.

Tonsillitis causes a considerable time loss, is distinctly contagious, besides being a precursor of focal infection. We should at least review all cases with suspicious throats more frequently than we do and be more firm in advocating tonsillectomy. Mock in his "Industrial Medicine and Surgery" calls attention to the fact that twenty-eight employees paid 160 visits to the doctor's office and remained home seventy-one times chiefly on account of tonsillitis and allied conditions prior to tonsillectomy. The same group made sixty-eight visits to the doctor's office and were absent from work only thirty-three times following tonsillectomy, an improvement of approximately 50 per cent.

After reviewing past experience, using the author's clinic as a basis, the following conclusions seem warranted:

(1) Applicants having the following defects may be admitted to most factories without undue risk, provided they are selectively placed and watched.

(a) Hernia of long duration which is complete or well held by a truss provided the applicant has done work similar to that for which he is hired for the four weeks preceding.

(b) Varicose veins, provided ulcer and edema of ankles are absent.

(c) Varicocele supported by suspensory.

(d) Flat foot if without symptoms, that is pain in foot when applicant walks on toes. Pain in back on bending over.

(e) Deafness, except in special departments.

(f) Vision, depending on hazard and department.

(g) Arteriosclerosis.

(h) Endocarditis, unaccompanied by marked myocarditis.

(i) Arrested tuberculosis—in special departments.

Special search should be made for the detection of:

(1) Arthritis of spine or sacro-iliac region.

(2) Arthritis of joints of long bones.

(3) Old injury to bones entering into a joint.

(4) Infected tonsils and those suggesting tendency to infection.

(5) Potential hernia in southern Europeans of the stocky build who have protruding abdomens and have not been doing heavy work for three or more weeks preceding hiring. These men present a rather relaxed external ring and there is slight bulging along the inguinal canal on cough.

From our experience we consider these five types of defect specially hazardous. They seem to figure largely in all industrial disability records.

## Nurses in the Guise of Industrial Physicians

### The Nurse's Whole Authority Is the Physician's Order; Nursing Care Is Not Medical Service

BY WILLIAM ALFRED SAWYER, M.D., EASTMAN KODAK COMPANY, ROCHESTER, N. Y.

**A**BOUT a month ago I received from a physician, unknown to me, the following letter:

I see that you are to read a paper before the American Association of Industrial Physicians and Surgeons in Boston, on "Nurses in the Guise of Industrial Physicians." As I have been visiting many plants and stores, perhaps I can give you some information on the subject.

Recently I have visited places where formerly a physician had charge of the medical work and now a trained nurse is in charge. In a certain city there is a doctor who trains nurses to do industrial work, even teaching them how to give a physical examination. At the factory where I formerly had charge of all the medical work, the superintendent hired a trained nurse to do the work when I left. The reason given was that nurses can be hired very much cheaper than any doctor.

If physicians do not watch out, nurses will supersede them in medical work in industrial plants, for more and more concerns are getting rid of their doctors. "What can be done about it?"

There is a real dilemma apparent in this phase of the industrial crisis. Fearful for the status of industrial medicine, one group of critics tells us of nurses disguised as physicians who were about to occupy the field, while a "rosier spectacle" contingent offers equally extravagant praise for achievements made, and for work projected. While all this discussion pro and con is going on some of us are more than dubious as to the future of industrial medicine.

For our present consideration employers may be grouped into two general classes: (1) Those who are doing the least possible to protect

*Laws did not create the need of medical service to industry. Neither does obeying the letter of the law meet its requirements. Its limitations are set, not by penny-wise and pound-foolish employers, but by industrial physicians themselves.*

*Here as elsewhere failure follows a low estimate of the problem. No specialist is confronted with greater complexities of a medical nature than those of the industrial physician.*

*The science of industrial medicine is yet to evolve, but it is in process, and the future is to the honest-to-goodness worker who neglects none of his tasks and delegates none of his responsibilities.*

themselves under the law. The large majority of these are those hard-headed men of finance who are "producers," not for the sake of the "game," which, of course, includes the "score," but whose mental processes have but one track,—profits. Of course this results in a medical department conducted on the "half-a-loaf" idea. (2) The class which, in spite of the present depression is growing steadily, those big men of vision and broad mind who maintain maximum standards because the best is such a little way ahead and because they find zest in the chase.

In either of these groups, though

more often in the first, there may be found nurses doing more than is warranted. Aside from the statements in the letter just quoted, many instances might be cited of nurses who are performing certain functions not ordinarily allotted to a nurse, and this may be justified up to a certain limit. If a medical department in industry is to care for all emergency illnesses, it is necessary in the present stage of evolution, that a nurse care for such proportion of these cases as standing orders and constant supervision will justify. Every cold, headache, and digestive disturbance is preferably seen by a physician. In some organizations that is the rule, but it is rare that physicians are proportionately numerous enough properly to consider every case in this way. We are obviously short sighted if in turning over the superfluity of cases to the nurse we feel satisfied that this local, or at best, superficial alleviation, is getting industrial medicine very far along the road to its maximum usefulness. The preventive phase of industrial medicine must be kept in the foreground by never ending instruction in personal hygiene through the employees' individual contact with nurses and doctors, singly and in groups, through the plant paper and other available agencies. We cannot afford to forget that we are identified as a class, whether we wish it or not. What industrial medicine is to become depends upon the efforts and collective personality as industrial physicians. A preacher, notable for his oratory, but of doubtful reputation, was on one occasion told by a parishioner:



"Your character speaks so loudly I cannot hear what you preach." The character of a medical department depends upon the purpose for which it was instituted and upon the personality of the medical director.

The dispensing of medicine by a nurse, for headaches, colds, etc., is allowed in some medical departments. Please note that I said "dispensing," not "prescribing." I consider that if the doctor in charge prepares signed orders regarding such emergencies as a nurse may safely care for, he has done the prescribing in blanket form and all the nurse does is to carry out his orders. That is all any nurse is qualified to do—*carry out the orders* of the physician in charge, thereby safeguarding herself and the department, as well as the employee. If these orders include the taking of temperature and pulse, inspecting the throat, and asking questions regarding elimination and abdominal pain, evidence will be elicited which will serve to indicate when the physician's personal attention is called for.

If the nurse is alert, well coached, and really interested in her job, she will sense real trouble when it presents itself and turn the employee over to the physician.

When the expedient of such blanket orders seems unavoidable, the procedure outlined is about as safe as can be suggested, particularly so if the dispensing of simple and harmless medication is made the occasion of a talk with the patient about personal hygiene and draws out pertinent facts or gives useful information about proper elimination, copious water drinking, abstinence from sweets, eating wisely and only at meal times, sufficient sleep, abundant fresh air, and daily exercise. The ideal to be sought is a staff of nurses so well schooled that, while trying to relieve present emergencies, they will preach and talk in terms not over the heads of employees, the gospel of prevention.

There may be those who object to this practice on the part of the nurse of dispensing medication, on the basis that employees usually come to the nurse with their ailments self-diagnosed and all the nurse usually does is to give them something for this or that symptom, while neglecting the cause. In practice, however, when an employee states that he feels "all in," the nurse will usually take his temperature and make a pulse reading and send the patient to the doctor, even when she would not hesitate to give a few tablets for a self-diagnosed and often seemingly self-evident condition. The fact remains, however,

that such practice often carries an employee through the day.

This is accomplished as much by the psychology of the situation as by the actual treatment,—a fact not to be overlooked. Neither is the fact to be disregarded that the average person easily hypnotizes himself into a sort of fatalistic disregard of consequences in the future, seeking only to alleviate immediate discomfort, rather than sparing the time and consideration necessary to understand and eliminate the cause. This is directly due not so much to self-diagnosis or medication by nurses, as to the erstwhile habit of the family doctor of riding behind the team of medicine and mystery. Better education, not only of the public but of physicians themselves, is doing away with these "faith pills." To countenance the treatment by a nurse of any physical malady, with its probable complications, could mean no progress or success and could not consistently be tolerated either by the employee or the wise employer.

We have had physicians criticize us for allowing nurses to give medication for colds and touch-up sore throats. I recall a case where the employee reported to a doctor, who was afterward called in, that the nurse at the factory had painted her throat with iodine, whereupon the physician expostulated upon the dangers of iodine used in this manner and ended by saying: "That is just the sort of treatment you can expect from those factory doctors and nurses." In the case cited the so-called "iodine" used was 25 per cent argyrol, which, naturally, the employee mistook for iodine.

What of removing splinters, foreign bodies from the eyes, the opening of small abscesses, treating boils, etc.? Some nurses can cleanse wounds satisfactorily and suture small lacerations. There are nurses, so well equipped by nature, training, and interest, who can be taught to do anything satisfactorily, and thus save much time of higher salaried physicians. This work, to be done with the minimum risk to the patient, certainly needs to be supervised by a physician. Methods and treatments are changing, and it requires association with those active in the profession and study of its literature in order to keep the medical department abreast of the times. Nurses are helping more and more in routine work; they are being taught to put on plaster casts, to take radiographs, to make various laboratory tests and examinations. As a roentgenologist recently

said, "Yes, we can teach nurses to do it all, so that we will have nothing to do but sit in an armchair and give orders."

### Worthy of His Hire

It is true that in industry we permit and even expect nurses to do more than they do in private practice. In some instances this has been carried too far and the nurse has done practically everything except care for the graver emergencies. Perhaps the explanation is that the nurse is as good as the doctor. Perhaps one reason why nurses are supplanting physicians in some concerns is that an average nurse can do the bulk of the work the managements want done quite as well as the type of doctor they are willing to hire.

There is a middle ground in what a nurse may do, which on the one hand avoids the dangers of over-reaching her proper function and, on the other, takes reasonable care of the needs of an emergent situation. Certainly, in a concern where no physician is in charge, a nurse should do nothing but give advice regarding personal hygiene.

It is safe to say that only a very small percentage of employers have been adequately impressed with the value of first-class health supervision of employees. Who is responsible for this? It seems to me that the answer lies within ourselves. The management knows that there are certain legal requirements that must be met and, generally speaking, it recognizes that a healthy working force is to be desired; but there are so many problems of labor with which management has had to deal, that such a thing as real industrial hygiene or medicine is to them only a thing of theory to be taken up some time in the future.

There is still another phase to this subject. At the beginning of the present business depression a number of industries curtailed their medical work to the extent of dismissing some of their physicians, and often without the customary notice. In one case, of which I have personal knowledge, several full time physicians were dismissed without any warning whatever,—as unfair a thing as one could imagine. I am not questioning the need of such action, but simply the result. In this particular instance it was a genuine tragedy. Some of these men who were in middle life, with families, licensed to practise in only a limited number of states, were left high and dry without a moment's notice. All other workers connected with industries can go into any state

and accept various positions without any state regulations, but not so with the doctor. He can practise only in those states in which he is licensed; hence the pinch of an unexpected release. Many will say: "Well, if doctors are going to enter industry, they must expect to meet the exigencies they encounter." Surely, they must, but "if they enter" looms large in view of what has happened during the present period of depression, and which, of course, may happen again. Can we urge the young graduate to enter the field as a specialty for his life work? The present outlook would make one hesitate to do so, and to one who believes thoroughly in full time physicians in industrial plants, this is a situation for thought.

Doesn't this all resolve itself into a question as to the ultimate opportunities for the physician entering industrial medicine? How far will he get professionally and financially? Not so long ago I heard one of our very able members remark that he was seriously considering the resumption of private practice, giving as his reason the apparent limitations of industrial work financially: five thousand dollars, six thousand dollars—a possible ten thousand dollars—is not a very adequate return for real ability and service nor a high objective to have for a family income, especially when so often the years of preparation and apprenticeship are long and lean. The nurse in the guise of physician is a flower of short bloom, certainly not to be regarded seriously as supplanting the doctor, and the day will come when the physician in industry will be rated as indispensable, of first rank among the executives, and as important to the organization as the legal counsel.

We are only on the verge of discovering our possible service to industry and we may be sure that the doctor's importance will become apparent as he grasps and feels the situation. With such function he should be worth a real salary to a corporation, but certainly he will not be if the bandaging of injured parts and the giving of pills is all that the physician with an industrial job is interested in, or if he interests himself only in activities where a nurse can be considered as able to supplant him. Even though at the present time often underpaid and unappreciated, good service pressed down and running over, not only of the individual plant doctor, but supplemented by the service of the National Organization as well, will prove the case and make a place which no nurse can supplant.

## Industrial Accident Boards Meet

THE eighth annual conference of the International Association of Industrial Accident Boards and Commissions met in Chicago September 19 to 23. The papers and discussions were by representative men in the field and the program touched upon the most vital current questions relating to compensation, legislation, and administration. The developmental background of the present scheme for compensation is reflected in many of the anomalies of its administration, but as it becomes less and less necessary to offer arguments for the principle of compensation, more and more the successive conferences of the International Association seek to solve these difficulties by bringing into open discussion specific problems arising of the administration of the laws.

California, experiencing difficulty in distinguishing between temporary and permanent disabilities, elicited in debate the criteria of differentiation in Colorado, New York, Wisconsin, and Ohio. Minnesota, being on the verge of changing her system of awards, the whole group was concerned in learning what rulings have been found inadequate and what better plans are incorporated in the new.

The Ontario survey to determine percentages of pension cases who have accepted impecunious poverty and the process there looking toward the development of a rate schedule were of current value to all administrative boards. If 40 per cent of the compensation in one district is paid for permanent partial disability, why is this proportion so much more or less in other communities? If Alabama is framing a new procedure, how may she avoid the pitfalls that have hampered other boards? The chief burden of the discussions on administrative problems was the concerted move to develop uniformity in dealing with schedules and the achievement of a legislative wisdom out of their experience to supplement expert judgment on the merits of the individual cases handled.

All of this has to do with cases as claimants for awards. Once disposed of, a case is easily classified, and a sufficient mass of precedent data constitutes a proper basis for future decision. The case that comes up for adjudication, however, is always an open question. Necessarily the administration of the law is in lay hands, while the merits of the case hinge upon highly technical matters.

If successful administration is to be achieved it will be through the clear statement by industrial boards in open meeting of specific problems and their discussion by qualified physicians in terms the layman can understand.

The medical program presented a valuable series of papers on subjects which present the most baffling conditions: "X-ray Interpretations and Standardization," by Dr. Hollis E. Potter; "Concussion and Contusion of the Brain with Post-Concussional Conditions," by Dr. Samuel C. Plummer; "Neuroses—Their Handling from an Industrial Commission Standpoint," by Dr. Lewis J. Pollock; "Can Breaking of Compensation in the Heart be Attributed to Accident?" by Dr. William H. Holmes; and "Medical Aspect of Women's Ills in Industry," by Dr. Clara Seippel.

Especially valuable was the talk of Dr. Plummer on brain injury and the physical methods of differential diagnosis.

Because the term neurosis is so seldom understood by laymen, Dr. Pollock preferred to classify under the definite term "traumatic hysteria," the rather large group of neuroses which simulate so closely the conditions of organic disease. Dr. Pollock outlined the incriminating adventitious symptoms which reveal the fact that traumatic hysteria presents a problem in conduct. In every case there is some form of precedent dissatisfaction as the initial cause of the nervous disorganization.

Dr. Holmes' argument was that, in the absence of external evidence of trauma, the breaking of cardiac compensation must be charged to antecedent disease and not to trauma. In discussing this paper, Dr. Harry E. Mock argued for preventive measures in keeping heart cases from hazardous employment.

Dr. Clara Seippel brought out the fact that as data are not kept on previous health conditions, especially as affecting women workers, which necessitates special efforts to make hygienic conditions right in factories where numbers of female workers are employed. The discussion brought out the limitations in weights women may lift and the heightened susceptibility of women to certain industrial poisons. There is a dearth of records pertaining to the health of women workers as such, said Dr. Seippel. It might be suggested that analysis of compensation cases in which women have appeared would be profitable. S. P. M.

# The Transportation of the Injured

By R. R. SAYERS, M.D., CHIEF SURGEON, UNITED STATES BUREAU OF MINES; PASSED ASSISTANT SURGEON, UNITED STATES PUBLIC HEALTH SERVICE, WASHINGTON, D. C.

**D**URING the past few years the important problem of transportation of the injured has gone through some marked changes. These changes are due in the main to the same things that have revolutionized transportation in other lines—the telephone and motor vehicles, the latter being especially important. Lieutenant Colonel F. S. Breton, of the British Royal Medical Corps, has described in a very interesting manner, in his book, "The Great War and the Royal Army Medical Corps," the effect of these changes.

As to the mining industry, an example might be taken from the old prospectors who twenty years ago lived in a cabin in the Crow Foot Mountains of Montana about twenty miles from the nearest town. If one of them was injured, his pardner cared for him as best he could for several days; then, when it became

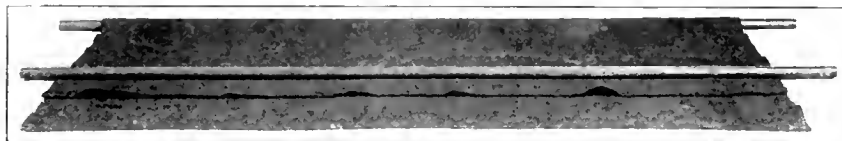
brought to my attention. A man working 2,500 feet below the surface in the North Star mine, Grass Valley, Calif., dropped a piece of timber and broke his ankle. He hopped on one leg to a nearby telephone, called up the station tender and told him what had happened. The skip used for hoisting men was lowered and the injured man taken to the surface. A motor ambulance and surgeon had been summoned from the hospital one mile away by use of telephone and were waiting at the collar of the shaft. In just thirty-five minutes from the time the man was injured, he was in the hospital, his broken ankle being Roentgen rayed, after having been set and placed in a plaster cast.

The problem of underground transportation of injured men is usually very much involved. This can best be illustrated by considering the work-

many of which are accessible only through steep, narrow openings. On the Calumet and Hecla Copper Company's property in Michigan, are located the deepest shafts in the United States. The workings of the lead and silver mines of the Coeur d'Alene region of Idaho are deep and extensive, as are those of the copper mines of Arizona and New Mexico and the gold mines of California. The statements made up to the present time have been of conditions in the metal mines of this country and bring out the importance and difficulties of transportation of the injured in such mines. While the coal mines of the United States are not so deep as the metal mines, their workings may be as extensive or even more so.

## A Hypothetical Case

To illustrate the transportation problem and at the same time show conditions in coal mines, let us follow a miner from his home to his work and suppose that he is injured in order that we may further show the care he receives. The home of the miner may be a fairly good home with sanitary surroundings, a home that shows it to be cared for both inside and out. The miner leaves his home and walks to the mine carrying his lunch with him, and enters the mine, and this entrance to the mine is well constructed of concrete. He walks down a manway to the working place or room and examines the roof, by tapping it with a pick handle to see if it is safe. There are no props to support this roof or to prevent loose rocks from falling. The miner, although he realizes the roof is not entirely safe, decides to risk it and goes to work mining with a pick. The roof falls and the miner is partly buried by the rock and coal from the roof. This accident is not an actual case but is one prepared to illustrate what might and often does happen. As it is a hypothetical case, we may suppose his injuries to be anything we wish. Let us consider that this man has a



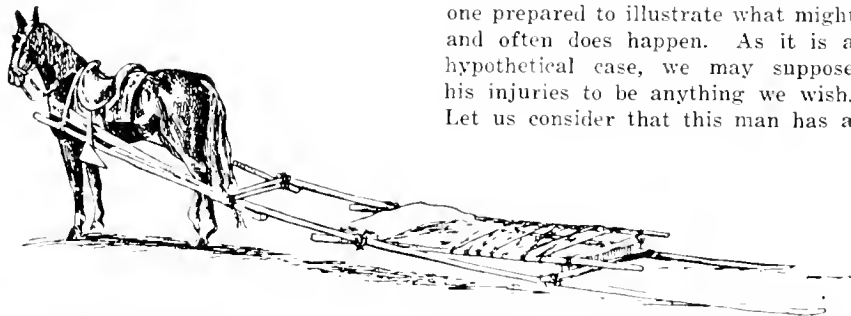
How an improvised stretcher can be instantly made.

necessary to transport him to a physician, this probably was done on an Indian travois made by cutting two poles fifteen or sixteen feet long, laying them side by side, and connecting them by two crossbars, one six feet from the end and the other six feet farther back. The bars were fastened to the poles with nails, bolts, or tied in place with cords. Between the crosspieces lacings of ropes or a blanket were fastened for a litter. One end was then attached to a horse by the saddle girths similar to shafts; the other end dragged on the ground. Two days were required for the trip, as it was very tedious.

## Relief Is Speeded

Today if a prospector's partner is injured or sick, the prospector telephones to a physician who motors out and gives the patient attention within a less number of hours than it took days formerly. Further, if hospital treatment is advisable, a motor ambulance is sent out and the patient transferred to the hospital within a minimum length of time. Another example of the effect of the telephone and motor vehicle was recently

ings of some of the larger mining properties in the United States. For instance, the Homestake Mining Company of Lead, S. D., has five shafts varying in depth from eight hundred to twenty-two hundred feet and has more than sixty miles of underground workings, all of which are connected. The North Butte mine at Butte, Mont., is over 3,600 feet deep, and the Leonard, Tramway, Anaconda, Never-sweat, and any of the other twenty odd mines of the Anaconda Copper Company on Butte Hill are all from one to three thousand feet in depth, with miles of extensive workings, many of which are connected, and



Old methods of transportation included the Indian travois, a slow and tedious method of transportation.



As the problem of underground transportation is usually very much involved, difficulties are devised to duplicate the possible conditions to be met.

lacerated wound on the thigh with arterial hemorrhage and is unconscious.

### How to Proceed

Now, miners usually work in pairs, so we will consider that the injured miner is found by his partner, who immediately removes the coal and rock from the injured man, examines him, and applies a tourniquet over the artery on the point of pressure between the wound and the heart to stop the hemorrhage. He also applies a first aid dressing to the wound. His next duty is to get the injured man to a place of safety, as more rock and coal may fall. If he is in a low seam of coal, he will use the one-man drag carry. This may be done by tying the injured man's wrists together or by using a loop of cloth or belt passed around the shoulders of the patient and over the carrier's neck; then by crawling, he drags the injured man to a place of safety. The bearer has had to decide why, when, how, and where to transport his patient. His reason for transportation was to get his patient to safety and to the doctor; "when," in this case, was immediately after stopping the arterial hemorrhage; and "how" was determined for him by the low roof, as in a three-foot seam; "where," only until he was sure of safety, which may have been a few feet or many. As soon as he has reached the entry or manway where he can stand upright, he may use "across the shoulders" or "fireman's carry"; this will probably be the method of transportation chosen, as his patient is unconscious and the method is less tiresome to the bearer than many others. This method of carry has been shown in almost all moving picture houses

as a method used by the soldiers in the World War. If the patient becomes conscious, he will object to the use of this method, as the blood flows to his head, and the bearer will use either pickaback or carry in arms. The carry in arms method is very useful in injuries to the feet and legs, but is more tiresome for the bearer than either of the other methods.

If a second man is available, a two-three-, or four-handed seat may be formed. If either the two or three handed seat is used, the free hand may be used to support the injured patient or the injured extremity.

The above methods of carrying an injured man are only suggested for use where more help is not available.

When the patient has been placed

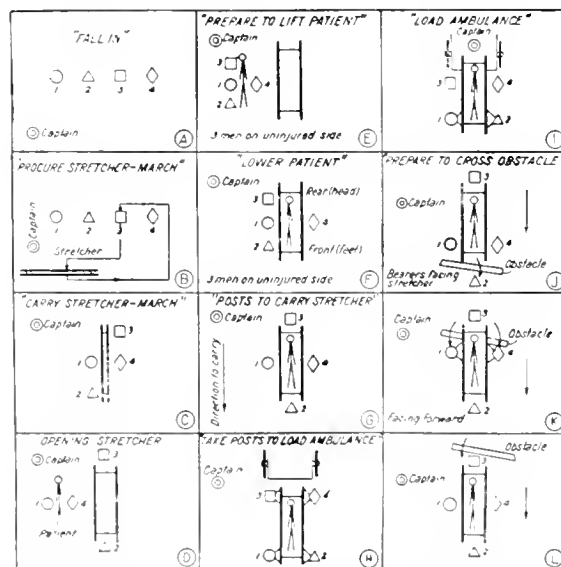
where he is safe and fairly comfortable, it is advisable to secure ample assistance and materials rather than to try to carry him alone or with the assistance of only one other man.

### Improvised Methods

Stretchers are almost indispensable in the transportation of injured men. If we suppose that our man is in a coal mine, an army stretcher, or litter as it is sometimes called, will probably be available. This consists of two long poles with a bed of canvas and the poles held apart by hinged iron bars; or a stretcher similar to the army type may be improvised by using two drill steels or poles seven and one-half by eight feet long and a blanket or piece of canvas the same length. After spreading the blanket out, place one pole about one foot from the center, fold the short side over the pole and place the second pole on the two thicknesses about two feet from the first pole; then fold the remaining part of the blanket over the second pole towards the first. When the injured person is placed on the stretcher, the folds of the blanket or canvas are locked by friction.

Another very satisfactory improvised stretcher can be made by using poles similar to those described above and two or three coats or jumpers. The sleeves are turned inside out and the two poles passed through them; the flaps are then turned down around the poles and buttoned underneath.

Had our patient had an injury to the back, a dislocated hip, or a fractured pelvis, a special improvised stretcher splint would have been used.



Stipulated problems, properly supervised, give the men the necessary experience which enables the expeditious handling of the injured.

This consists of two long boards 4 inches by 1 inch by 8 feet, and three short ones 4 inches by 1 inch by 18 inches. The long ones should be placed parallel to each other about four inches apart and the three short ones leashed to the long ones at a level with the patient's shoulders, hips, and ankles. After padding the two long splints, the patient may be secured to the splint by cravat bandages about the extremities and body. This stretcher is very useful in bringing injured men down vertical or steeply inclined manways.

If our miner had been injured in a metal mine, the Stokes navy stretcher or the Homestake stretcher would probably have been used. The Stokes stretcher is a wire woven basket made to fit a man's form and is equipped with straps to secure the patient in the stretcher. He may then be raised or lowered in a vertical position without injury. The Homestake stretcher is made of a solid plank about seven feet long and 1 inch thick and cut to correspond somewhat to the human form. It has a footboard on which the patient may stand when being raised or lowered. Of course he must be securely strapped to the stretcher before transportation is undertaken.

### Stretcher Drill Useful

The stretcher drill recommended by the United States Bureau of mines is practically the same as that used in the United States army, the American Red Cross and other military and allied organizations. It is well to study the diagram of the drill shown, as it shows the various duties of each man much better than can be described by words. There are four



Metal mines of the United States present the greatest difficulties of transportation. Coal mines, while not so deep, are even more extensive in their workings.

men, bearers, in the squad, and the captain.

The men face so that the patient will be carried feet foremost. This is the proper way to carry the patient except when going up stairs or up hill, when he should be carried head foremost.

### The Use of Masks

If we had supposed the miner to have been injured during a mine fire or explosion from which poisonous gases were produced as sometimes happens, it might have been necessary for the stretcher squad and captain to wear self-contained oxygen breathing apparatus in order to rescue the injured man. They would carry extra oxygen breathing apparatus to be placed upon the injured man to protect him from the poisonous gases. This method has been used at many mine disasters and has

been the means of saving lives which would otherwise have been lost.

While carrying an injured man on a stretcher is a good method of transportation, any carry becomes tiresome if the distance is a few thousand feet, as often is the case in mines. Further the injured man suffers much due to missteps, caused by the rough roadway and poor lighting found underground. To avoid the above objections some mines are equipped with ambulance cars for transporting injured men, when underground. An example of this is found at the Seneca mine of the Calumet & Hecla Co. This ambulance car is nicely upholstered and equipped with springs.

Another type used by the Homestake Mining Company of Lead, S. D., is similar to a two wheel cart, is pulled by hand and not intended to run on the car tracks. It is equipped with springs and covered. In some cases it may be necessary to take the man out where water, dirt or small rock might fall on him. The cover is some protection from these.

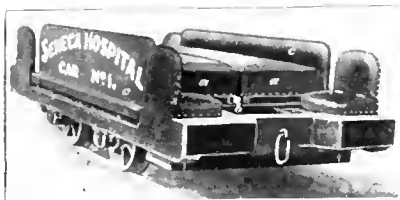
### An Improvised Ambulance

A practical method of improvising an underground mine ambulance is to equip an ordinary mine car, used regularly for hauling the coal out of the mine, with four springs. The springs are attached to the upper edge of the sides of car near the corners and the stretcher suspended in the car from these springs. This method can be used in most of our coal mines. The springs should be placed with the stretcher so that both may be obtained at the same time.

To summarize: The reasons for transportation are to get the injured man to a place of greater safety, to make him more comfortable, to prevent further injury through handling,



A practical method of improving an ordinary mine car with springs for the comfortable transportation of the injured.



The Seneca Mine of the Calumet & Hecla Co., furnishes an ambulance car, upholstered, and equipped with springs, for the transportation of its injured.

and finally to get him where he may receive proper treatment.

How to transport, or the method of transportation, may be one-man, two-man, stretcher squad, or car transportation—any one or all of which may be used for one or more injured persons.

When to transport an injured person will depend upon the nature of the injury—for he often must receive proper first-aid or emergency treat-

ment prior to transportation—whether the present location of the patient is safe or not, and the availability of assistance for transportation, and the availability of capable and efficient equipment and personnel for treatment.

## Maryland Health Demonstration

Washington County has been suggested by Dr. John S. Fulton, Baltimore, secretary of the State Board of Health, as the section for the demonstration in efficient health administration about to be launched under the auspices of the State Department of Health, the United States Public Health Service, the School of Hygiene and Public Health, and the International Health Board. Dr. Richard P. Normant, Hagerstown, will be in charge of the field work.



The Stokes Navy Stretcher is a wire woven basket made to fit a man's form and fitted with straps to secure the patient so that he may be raised or lowered in a vertical position without injury.

# A Study of Industrial Absenteeism

## The Problem Is Half Solved When It Is Understood and Fully Stated

BY ROBERT S. QUINBY, M.D., SERVICE MANAGER, HOOD RUBBER COMPANY, WATERTOWN, MASS.

THE lack of convincing information concerning industrial absenteeism is the most conspicuous feature in connection with this subject. There has been, to date, very little available knowledge either as to the amount of time lost by employees of industry, the reasons for this loss, or methods for minimizing it. The economic loss to industry and its participants on account of absenteeism has never been fully appreciated. Some general surveys have been made, but they have usually covered only brief periods of study, unusual groups of employees, or questionable methods of collecting data which has had a tendency to discount many of the conclusions drawn from the studies. Most of the studies of conditions in foreign countries have been based on health insurance conclusion, and the data presented in the reports has not always been convincing to an impartial observer.

It has been the purpose in making the investigation on which this study is based to collect sufficiently correct and adequate data so as fairly to represent the facts as they exist among this group of industrial workers. It is also the object to make these facts available in such form as to stimulate

further research, and particularly for comparison with other groups, so that some definite and reliable conclusions may be reached and some constructive program directed toward the prevention of this form of industrial waste may be instituted.

This investigation has covered twenty-eight months, extending from January 1, 1919, to April 30, 1921. This period has been unusual in several respects; (1) It has represented a time of unusual business conditions, including a rapid expansion, a peak of production followed by a period of gradually increasing business depression, during the latter months of which a considerable reduction has been made in the number of employees. It has included the latter portion of the first influenza epidemic and the entire second year of the epidemic, which again, was complicated by unusual weather conditions. In addition to this abnormal epidemic should be mentioned the numerous and serious sequelae resulting from the primary cases of influenza.

During the twenty-eight months of this study the average number of employees was approximately 6,700, and was composed entirely of factory workers, the clerical force not being included in the statistics herein sub-

mitted. The group was made up of 65 per cent males and 35 per cent females, of which 55 per cent were married, and 45 per cent single.

The following table represents the nationality distribution:

Race	Per Cent
Americans .....	50
Italians .....	15
English .....	7
Irish .....	7
Armenian .....	5
Poles, Greeks, Lithuanians, each...	3
All others .....	7

Age Distribution	Per Cent
Under 20 years of age.....	15
20 to 30 years.....	40
30 to 40 years.....	24
40 to 50 years.....	13
50 to 60 years.....	6
60 years and over.....	2

The residential grouping was as follows: Watertown, 25 per cent; Metropolitan Boston, 24 per cent; Cambridge, 20 per cent; the remaining number came from other cities and towns which compose Greater Boston district.

The length of employment groupings were as follows:

	Per Cent
Employed under 1 year.....	28
1 to 2 years.....	18
2 to 3 years.....	17
3 to 5 years.....	20
5 to 10 years.....	5
Over 10 years.....	12



TABLE I.—ABSENTEEISM BY CAUSES DURING TWENTY-EIGHT MONTHS, JANUARY 1, 1919, TO APRIL 31, 1921.

CAUSE	PER CENT OF WORKING TIME LOST	PER CENT OF ALL TIME LOST
SICKNESS	2.086	37.06
INDUSTRIAL ACCIDENT	0.159	2.52
NON-INDUSTRIAL	0.079	1.44
PERSONAL REASONS	3.840	58.98
TOTAL	6.164	100.

Thirty-eight per cent have no financial dependents.

In considering the fact that the average number employed was approximately 6,700, it should be remembered that a much greater number of individuals was represented during the course of this investigation because of the labor turnover which occurred during this period.

The above facts have been given for the purpose of indicating that the group under investigation is a very representative one from all points of consideration. It should also be kept in mind, as before mentioned, that this study has to date covered a very unusual industrial period from both general employment and health standpoint, and that the natural expectation would be that the facts brought out in this investigation would be less favorable than during a reasonably normal time.

Although it had been our custom to investigate absences prior to January 1, 1919, the information secured was not sufficiently detailed or comprehensive to be included in this report. On January 1, 1919, our Benefit Plan became effective, and it has been necessary for the proper administration of this plan to make detailed and accurate investigations concerning absenteeism, and carefully to record results.

The Benefit Plan provides for financial aid in cases of sickness, non-industrial accident, and death. After a seven-day waiting period, benefits are paid weekly to sickness and to non-industrial accident cases in amounts ranging from eight dollars to twelve dollars, and covering a

period of from seven to fifty-two weeks, depending on length of employment, from three months to five years. In cases of death we also pay benefits ranging from two hundred to one thousand dollars, likewise depending on length of employment, to the dependent beneficiaries.

All absences are reported daily to the central office by various department heads, and on the second day of the absence throughout practically all this investigation, each absentee was visited by a nurse. She determined the reason for absence, the probable length of disability and rendered whatever services were possible or practical in cases of sickness or acci-

dent cases, and on account of fifty-three deaths to employees. More than thirty thousand home visits were made by physicians and nurses within the twenty-eight months. Because of the small number of deaths, no conclusions concerning mortality rates have been included in this report.

Without going into detailed statistics, attention is called to some of the outstanding features connected with our absence experience during these twenty-eight months.

The employees in the group covered by this investigation lost an aggregate of 245,442 days from work during the twenty-eight months of study. When reduced to days-lost-

TABLE III.—ABSENTEEISM DUE TO SICKNESS AND ACCIDENT: BY AGE GROUPS.

AGE GROUPS	DAYS LOST PER EMPLOYEE ON ACCOUNT OF							
	Total Sickness and Accident		Sickness		Ind. Accident		Non-Ind. Acc.	
	Male	Female	Male	Female	Male	Female	Male	Female
10 - 20 years	4.27	6.80	3.71	6.53	0.25	0.12	0.31	0.14
20 - 30 "	4.26	8.64	3.90	8.36	0.21	0.10	0.16	0.19
30 - 40 "	4.24	11.47	3.71	10.95	0.37	0.10	0.15	0.43
40 - 50 "	5.64	10.35	5.06	9.65	0.63	0.57	0.15	0.18
50 - 60 "	8.35	15.67	7.34	9.63	0.68	0.00	0.85	6.03
60 - 70 "	10.25	11.11	8.42	11.11	0.48	0.00	1.36	0.00
70 and over	18.56	0.00	17.72	0.00	0.83	0.00	0.00	0.00
TOTAL	5.00	8.73	4.43	8.35	0.37	0.12	0.20	0.27

dent. Frequent recourse was made to the diagnosis of the attending physician, as well as to the assistance of our own physician.

All cases of sickness or accident were re-visited or they came to the hospital personally at least once a week during the period of disability; in many instances these cases were followed nearly every day. As time has gone on, we have more carefully checked and investigated reasons for these disabilities and absences, and I believe that during at least the last twenty months of this investigation, the information obtained has been as nearly correct as is possible to collect in any such investigation.

During this period financial benefits were paid to 2,137 sickness and acci-

per-employee-per-year this represents loss of time as follows:

	Days per Employee
Sickness .....	6.61
Industrial Accident.....	0.45
Non-Industrial Accident....	0.25
Personal Reasons .....	10.95
Total for all causes.....	18.26

No detailed tabulations concerning days lost on account of personal reasons have been included in this report because of the necessarily high factor of error which is bound to enter into such an investigation. In general our experience has indicated that time lost on account of personal reasons is due to a great number of indefinite causes, and the absences are of short duration, making it almost impossible to obtain accurate causes for the absences.

Table I indicates that the total average lost time from all causes during this period has been 5½ per cent of the working time, of which approximately 2 per cent was lost on account of sickness, 0.14 per cent on account of industrial accidents, and 0.08 per cent because of non-industrial accidents. A study of our experience would indicate that, except in very unusual periods, sickness disabilities should not exceed 2 per cent of the working time, or, in other words, six

TABLE II.—ABSENTEEISM DUE TO SICKNESS AND ACCIDENT: BY SEX AND MARITAL CONDITION.

SEX AND MARITAL CONDITION	DAYS LOST PER EMPLOYEE ON ACCOUNT OF			
	Total Sickness & Accident	Sickness	Industrial Accident	Non-Ind. Accident
Married Males	5.03	4.45	0.42	0.16
Single Males	4.91	4.36	0.32	0.22
Widowed and Divorced Males	5.94	4.85	0.09	0.99
Total Average Males	5.00	4.43	0.37	0.20
Married Females	13.51	13.07	0.11	0.33
Single Females	6.87	6.56	0.13	0.17
Widowed and Divorced Females	12.48	10.47	0.00	2.00
Total Average Females	8.73	8.35	0.12	0.27
Total Married	6.73	6.18	0.36	0.19
Total Single	5.83	5.39	0.24	0.19
Total Widowed and Divorced	9.11	7.59	0.05	1.47
Total Average	6.31	5.79	0.29	0.23

days per employee, based on the three-hundred-day working year.

### Variability in Time Loss

Sickness and accident accounted for 41 per cent of the total time lost, while personal reasons were responsible for 59 per cent. It is of interest to note, however, that at times the percentage of sickness and accident disability to the total lost time has varied between the extreme limits of 33 per cent and 66 per cent. These variations have been brought about by both changes in industrial employment demands and varying health conditions. The abnormally high sickness rate during part of this period has had a tendency to increase the percentage of working time lost due to sickness, while employment reductions have had the effect of decreasing personal reasons absenteeism, particularly during the latter months of the investigation.

Table II concerns absenteeism due to sickness and accident by sex and marital conditions and shows some very interesting variations. Single employees lost much less time than married persons, single males less than single females. Married males lost 2 per cent more time than single males, widowed and divorced males 21 per cent more, single females 40 per cent more, widowed and divorced females 154 per cent more, while married females lost 175 per cent more.

It is generally admitted that both married males and females show a lesser labor turnover than single persons, but a portion of this employment stability is sacrificed for the higher absentee rate of these married individuals, and from the standpoint of absenteeism alone, our experience indicates that married and divorced individuals are a considerable liability.

TABLE V.—ABSENTEEISM DUE TO SICKNESS AND ACCIDENT: BY DAYS OF THE WEEK.

NATIONALITY	DAYS LOST PER EMPLOYEE ON ACCOUNT OF							
	Total Sickness and Accident		Sickness		Ind. Accident		Non-Ind. Accident	
	Male	Female	Male	Female	Male	Female	Male	Female
American	4.17	7.45	3.64	7.04	0.56	0.99	0.18	0.32
Armenian	5.74	11.06	5.05	10.95	0.29	0.---	0.40	0.09
English	6.61	8.77	5.83	8.33	0.51	0.33	0.27	0.10
French	3.32	3.60	3.19	3.43	0.02	0.17	0.11	0.---
Greek	3.64	16.56	3.79	16.56	0.04	0.---	0.02	0.---
Irish	7.34	15.73	6.33	14.83	0.65	0.62	0.36	0.27
Italian	6.01	10.78	5.39	10.52	0.51	0.03	0.11	0.23
Lithuanian	3.85	8.83	3.48	8.76	0.19	0.06	0.19	0.---
Polish	4.33	10.27	4.05	9.33	0.16	0.08	0.13	0.88
Portuguese	6.50	11.09	6.17	10.72	0.---	0.---	0.33	0.37
Russian	3.93	12.31	3.78	11.97	0.11	0.---	0.03	0.43
All Others	3.77	8.40	3.10	8.30	0.11	0.---	0.56	0.09
TOTAL	5.00	8.73	4.43	8.35	0.37	0.12	0.20	0.27

Table III, showing absenteeism by age groups, indicates, first, that male employees lost on account of sickness and accident on an average of five days, whereas female employees lost approximately eight and three-fourths days.

Below the age of forty, the lost time by males is below the average male disability, while beyond the age of 45, males show a rapidly increasing morbidity rate. In the case of females, the rate remains less than the average up to the age of thirty, while beyond that age the rate increases. From an employment standpoint, therefore, we might well give careful consideration to women over the age of thirty, and men over forty.

### Racial Factors Enter

According to Table IV, which shows disability by nationalities, the American born tend to lose less time from sickness and accident than most other nationalities. The relatively small number of certain nationality groups here considered, however, tends to discount the reliability of conclusions

drawn over such a short period of time.

Our experience, as shown by Table V, indicates that the male disability rate is higher on Monday than on other days, and gradually decreases until Saturday, when it again takes a slight rise. The female rate likewise is higher on Monday, and decreases until Friday, when it again increases slightly. Changes in wage payment systems, as well as in Saturday workday schedules, have undoubtedly had a varying effect on this condition in our particular case, but it is doubtlessly fair to say that the sickness rate is slightly higher in both sexes on Monday.

An interesting variation in time lost on account of sickness and accident from month to month is shown in Table VI.

During the months of March and April, 1919, the morbidity rate showed a considerable increase above the average, due to a large number of influenza-pneumonia cases. During the months of January, February, March, April, and May of 1920 our experience again indicated an abnormal sickness disability rate due to the second year of the epidemic and to complicating diseases. During the winter of 1921 there was a slight increase in sickness rate which would be attributed to no particular epidemic, but to the natural increase in sickness during the winter months.

High personal reasons absenteeism conforms to what might be expected, namely, increases during the spring and later summer, and during the abnormal weather conditions which prevailed in the latter part of January and the month of February of 1920.

It is interesting to note the rapidly declining personal reasons rate, beginning in the fall of 1920, this

TABLE IV.—ABSENTEEISM DUE TO SICKNESS AND ACCIDENT: BY NATIONALITY.

DAY OF THE WEEK	PER CENT OF EMPLOYEES' ABSEN. FROM WORK					
	TOTAL		MALE		FEMALE	
	1919	1920	1919	1920	1919	1920
MONDAY	8.34	5.77	5.11	4.66	8.65	7.82
TUESDAY	5.83	5.65	4.70	4.56	7.97	7.67
WEDNESDAY	5.33	5.29	4.29	4.19	7.84	7.33
THURSDAY	5.30	5.30	4.16	4.16	7.46	7.42
FRIDAY	5.51	5.18	4.11	3.98	8.14	7.45
SATURDAY	6.03	5.43	4.75	4.32	8.44	7.52
AVERAGE	5.75	5.45	4.52	4.32	8.06	7.55

	1919	1920
AVERAGE PER CENT OF FEMALE ABSENTEES	8.06	7.55
AVERAGE PER CENT OF MALES ABSENTEES	4.52	4.32
DIFFERENCE	3.54	3.23

reduction being attributable to a reduction of the employed force, which, as above mentioned, tended to decrease personal reasons absenteeism.

As a general rule, a chart of disabilities by causes, by months, indicates that the months of high sickness disability also show a high personal reason rate. This is usually due to sickness in the family which necessitates the employee's absence from work.

When studied by months, the rise and fall of disability on account of accident follows fairly well the curve of sickness. This may indicate that the conditions which cause sickness disability also cause accidents, or that employees who are physically ill are more apt to be injured than well employees. In the past there has been a tendency on the part of safety and illuminating engineers to place the responsibility for the winter increase in accident frequency on improper illumination. Our experience would indicate that a study of accident frequency, and disability, and sickness absenteeism, together with the hourly distribution of accidents, might lead to some constructive conclusions.

Table VII shows sickness and accident disability by physical examination classifications. Applicants for work are physically examined prior to employment, as well as being examined periodically during employment, and are classified as follows:

*Class 1.*—Persons physically fit for any employment, showing no physical defects of consequence.

*Class 2.*—Persons physically fit for any employment, but showing minor physical defects.

*Class 3.*—Persons showing subnor-

TABLE VI.—PERCENTAGE OF WORKING TIME LOST, BY MONTHS, JANUARY 1, 1919, TO APRIL 31, 1921.

MONTH	ALL CAUSES			PERSONAL REASONS			PER CENT OF WORKING TIME LOST ON ACCOUNT OF SICKNESS			ACCIDENT			NON-IND. ACCIDENT		
	1919	1920	1921	1919	1920	1921	1919	1920	1921	1919	1920	1921	1919	1920	1921
January	5.39	8.59	3.78	3.50	4.27	1.66	1.51	4.06	1.93	0.08	0.15	0.12	0.10	0.11	0.04
February	5.14	9.86	4.24	3.27	5.37	1.74	1.64	4.30	2.29	0.17	0.12	0.16	0.06	0.37	0.09
March	6.27	6.19	4.01	3.98	5.39	1.64	2.13	2.60	2.10	0.20	0.06	0.15	0.06	0.13	0.11
April	6.95	6.57	4.37	4.27	3.94	2.08	2.54	2.39	2.02	0.02	0.09	0.14	0.03	0.13	0.13
May	7.69	8.05		5.65	3.56		1.78	2.36		0.16	0.09		0.10	0.03	
June	4.70	4.04		2.90	1.99		1.80	1.94		0.10	0.06		0.10	0.05	
July	4.72	4.46		3.10	2.73		1.39	1.52		0.16	0.12		0.07	0.09	
August	5.13	6.10		3.34	4.09		1.51	1.71		0.19	0.08		0.07	0.21	
September	5.71	4.24		3.77	2.56		1.79	1.52		0.14	0.09		0.01	0.08	
October	5.80	4.22		3.70	2.04		1.80	1.93		0.20	0.18		0.11	0.08	
November	5.20	3.19		3.29	1.89		1.87	1.11		0.21	0.11		0.03	0.08	
December	6.03	3.19		3.82	1.82		2.01	1.29		0.15	0.05		0.05	0.04	
AVERAGE	5.65	6.61		3.63	3.72		1.78	2.07		0.18	0.12		0.06	0.11	

TABLE VII.—STATISTICS OF ABSENTEEISM DUE TO SICKNESS AND ACCIDENT: BY PHYSICAL EXAMINATION CLASSIFICATION.

PHYSICAL EXAMINATION CLASSIFICATION	DAYS LOST PER EMPLOYEE ON ACCOUNT OF							
	TOTAL SICKNESS & ACCIDENT				NON-IND. ACCIDENT			
	SICKNESS		IND. ACCIDENT		SICKNESS		IND. ACCIDENT	
	Male	Female	Male	Female	Male	Female	Male	Female
CLASS 1	4.67	7.37	4.25	7.07	0.25	0.09	0.16	0.21
CLASS 2	5.27	10.72	4.51	10.31	0.69	0.11	0.16	0.30
CLASS 3	6.23	11.92	5.59	11.12	0.44	0.80	0.21	0.00

mal conditions due to some grosser physical defects, and only employed in specified occupations.

This table indicates that time lost on account of sickness and accident conforms quite closely to the risk as suggested by the physical examination classification. In considering this table it is to be noted that certain unclassified cases are not included in this table, so that the total lost days does not conform to those in other tables; but, as far as the figures are shown, they indicate conditions as they exist.

During the year 1920, diseases were

classified according to the "International List of Causes of Death." It is difficult, without going into detail, to give comprehensive comparisons according to this classification, so I have first taken the main divisions, and our experience shows that time is lost according to Table VIII.

General diseases—including tuberculosis, rheumatism, influenza, diphtheria, scarlet fever, typhoid, etc.—caused 1.46 days disability per person.

Respiratory diseases—including colds, bronchitis, pneumonia, pleurisy, etc.—caused 1.26 days disability per person.

Diseases of the digestive system caused 1.11 days disability per person.

Ill defined and unclassified sicknesses caused 1.09 days disability per person.

Affections produced by external causes caused .41 days disability per person.

Diseases of the bones and organs of locomotion caused .32 days disability per person.

Diseases of the nervous system and organs of special senses caused .22 days disability per person.

Diseases of the circulatory system caused .16 days disability per person.

Non-venereal diseases of the genito-urinary system caused .15 days disability per person.

Diseases of the skin and cellular tissue caused .09 days disability per person.

The puerperal state caused .05 days disability per person.

TABLE VIII.—ABSENTEEISM DUE TO SICKNESS AND ACCIDENT: BY DIAGNOSIS CLASSIFICATION, 1920.

DIAGNOSIS CLASSIFICATION	DAYS LOST ON ACCOUNT OF					
	TOTAL		MALE		FEMALE	
	Total	Per Employee	Total	Per Employee	Total	Per Employee
General Diseases	13,382	1.463	6994	1.175	6388	2.001
Diseases of Nervous System and Organs of Special Sense	2,031	0.222	1250	0.210	781	0.245
Diseases of Circulatory System	1,470	0.161	838	0.141	632	0.198
Diseases of the Resp.-System	11,561	1.264	6663	1.119	4898	1.534
Diseases of the Digest. "	10,123	1.107	4822	0.810	5301	1.660
Non-venereal Diseases of the Genito-Urinary System	1,378	0.152	310	0.052	1068	0.334
The Puerperal State	528	0.058	----	-----	528	0.165
Diseases of the Skin and Cellular Tissue	732	0.087	536	0.090	256	0.080
Diseases of the Bones and Organs of Locomotion	2,900	0.317	1750	0.294	1150	0.360
Malformation	48	0.005	45	0.008	3	0.001
Affections Produced by External Causes	3,740	0.409	2418	0.406	1322	0.414
Illdefined & Unclassified Dis.	3,462	0.379	1070	0.179	2392	0.749
Sickness of Short Disability	6,609	0.727	3066	0.515	3216	1.010
TOTAL	57,703	6.310	29762	5.000	27951	8.730

Malformations caused .005 days disability per person.

Considered from the viewpoint of individual diseases, the more important follow in order:

Influenza caused .718 days disability per person; colds, .53; tonsillitis, .341; bronchitis, .312.

Pulmonary tuberculosis caused .24 days disability per person.

Rheumatism caused .235 days disability per person.

Appendicitis caused .171 days disability per person.

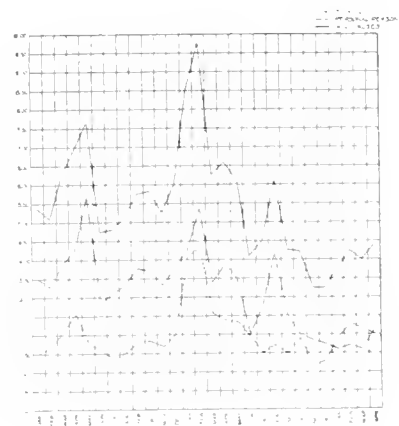
Broncho- and lobar pneumonias

caused .169 days disability per person.

Pleurisy caused .095 days disability per person, while hernias cause 0.91 days disability per person.

If we combined influenza, pulmonary tuberculosis, broncho- and lobar pneumonia, pleurisy, and other respiratory diseases, our experience in 1920 indicates that this group caused more than 35 per cent of our total disability on account of sickness and accidents combined.

It is interesting to note from Table IX that females lost practically twice as much time on account of influenza,



Percentage of time lost—by months and causes.

TABLE IX HOOD RUBBER COMPANY. STATISTICS OF ABSENTEEISM DUE TO SICKNESS AND ACCIDENT: BY DISEASE CLASSIFICATION, 1920.

DISEASE CLASSIFICATION	DAYS LOST ON ACCOUNT OF					
	MALE		FEMALE		TOTAL	
	Total	Per Empl-oyee	Total	Per Empl-oyee	Total	Per Empl-oyee
<b>GENERAL DISEASES</b>						
Typhoid	60	0.010	131	0.041	191	0.021
Influenza and grippe	3,138	0.527	3,432	1.075	6,570	0.718
Smallpox, measles, scarlet fever						
Whooping cough, diphtheria, mumps,						
German measles, chickenpox, and						
other epidemics	188	0.032	375	0.017	563	0.062
Infections (purulent infection						
and septicemia)	70	0.012	58	0.018	128	0.014
Tuberculosis of lungs	1,472	0.247	776	0.243	2,248	0.246
Other forms of tuberculosis	44	0.007	110	0.034	154	0.017
Cancer (all forms)	40	0.007	254	0.079	294	0.032
Rheumatism	1,355	0.228	794	0.249	2,149	0.235
Chronic occupational poisons	21	0.004	--	--	21	0.002
Other general diseases	506	0.102	458	0.143	1,064	0.116
<b>DISEASES OF NERVOUS SYSTEM AND ORGANS</b>						
<b>OF SPECIAL SENSE</b>						
Mental alienation	--	--	33	0.010	33	0.004
Neuralgia and neuritis	147	0.025	176	0.055	323	0.035
Other diseases of nervous system	564	0.096	339	0.106	903	0.099
Diseases of eyes and their annexa	271	0.046	48	0.015	319	0.035
Diseases of ears	268	0.045	185	0.058	453	0.049
<b>DISEASES OF CIRCULATORY SYSTEM</b>						
Diseases of the heart	498	0.084	239	0.075	737	0.081
Diseases of the veins	207	0.035	76	0.024	283	0.031
Other dis. of circulatory system	133	0.022	317	0.099	450	0.049
<b>DISEASES OF THE RESPIRATORY SYSTEM</b>						
Colds and other diseases of the						
nasal fossae	2,265	0.380	2,587	0.810	4,852	0.530
Bronchitis (acute and chronic)	1,475	0.248	1,382	0.433	2,857	0.312
Bronchopneumonia and lobar						
pneumonia	1,234	0.207	308	0.096	1,542	0.169
Pleurisy	696	0.100	281	0.088	977	0.095
Other dis. of respiratory system	1,093	0.183	340	0.106	1,433	0.157
<b>DISEASES OF THE DIGESTIVE SYSTEM</b>						
Diseases of the mouth and annexa	122	0.020	414	0.130	536	0.059
Tonsillitis and other diseases						
of the pharynx	1,162	0.195	1,950	0.611	3,112	0.341
Diseases of the stomach	1,494	0.251	1,226	0.384	2,720	0.297
Diarrhea and enteritis	307	0.051	240	0.075	547	0.059
Appendicitis and typhilitis	421	0.071	1,147	0.359	1,568	0.171
Hernia	738	0.124	97	0.030	835	0.091
Other diseases of the digestive						
system	578	0.097	227	0.071	805	0.088
<b>NON-VENEREAL DISEASES OF THE GENITO-</b>						
<b>URINARY SYSTEM</b>						
Acute nephritis and Bright's dis.	23	0.004	45	0.014	68	0.007
Other diseases of classification 6	287	0.048	1,023	0.321	1,310	0.143
<b>THE PUERPERAL STATE</b>						
<b>DISEASES OF THE SKIN AND CELLULAR</b>						
<b>TISSUE</b>						
Furuncles	336	0.056	85	0.027	421	0.046
Other diseases of classification 8	200	0.034	171	0.054	371	0.041
<b>DISEASES OF THE BONES AND ORGANS OF</b>						
<b>LOCOMOTION</b>						
Diseases of bones and joints	1,015	0.171	430	0.135	1,445	0.158
Lumbago and other diseases of						
organs of locomotion	735	0.123	720	0.225	1,455	0.169
<b>MALFORMATIONS</b>						
Affections produced by external						
causes	2,418	0.406	1,322	0.414	3,740	0.409
ILL DEFINED AND UNCLASSIFIED DIS.	1,070	0.179	2,392	0.749	3,462	0.379
SICKNESS OF SHORT DURATION						
(NO DIAGNOSIS GIVEN)	3,066	0.515	3,216	1.010	6,282	0.727
<b>TOTAL</b>	<b>29,762</b>	<b>5.000</b>	<b>27,941</b>	<b>8.730</b>	<b>57,703</b>	<b>6.310</b>

colds, and tonsillitis, as males, that the disability from pulmonary tuberculosis, rheumatism, and all types of accident was nearly the same in both sexes, while from broncho- and lobar pneumonia, males lost more than twice as much time as females. The monthly distribution of influenza and pneumonia cases, by sex, indicated that our male employees were disabled with influenza earlier than the females, and that the disability per case was less than with the females. The pneumonia cases, however, showed a longer disability for men than for women.

Detailed experience concerning length of disability on account of sickness and accident is instructive. Our experience on durations of disabilities is:

Duration of Disability	Per Cent of Cases
Less than 1 week.....	27.02
Less than 2 weeks.....	52.37
Less than 3 weeks.....	66.00
Less than 4 weeks.....	74.65
Less than 7 weeks.....	86.80
Less than 13 weeks.....	93.29
Less than 26 weeks.....	98.15

Many such statistical studies as have been presented here are valuable to the particular industrial establishment from which they are collected, but in order to contribute to the general fund of knowledge concerning industrial morbidity and absenteeism, it will be necessary to collect comparable data from many and various industries. It has been constantly in our minds throughout this investigation that we were securing considerable information which would be of value only after a long period of time, much other data that would be useful only because of their negative nature. We have continued, however, with the idea of discovering for ourselves what was useful and necessary, and also of giving to other industries who may desire it the benefit of our experience, both constructive and destructive.

# INSTITUTIONAL HEALTH

*The Health Problems of Schools and Colleges, Hotels, Summer Camps, Children's Homes and Homes for Dependents*

## Experiments in Air-Conditioning the Home\*

**The Relation of Health to Atmospheric Environment Demands Scientific Air Control**

BY EMERY R. HAYHURST, PH.D., M.D., PROFESSOR OF HYGIENE, OHIO STATE UNIVERSITY, AND CONSULTANT, DIVISION OF INDUSTRIAL HYGIENE, OHIO STATE DEPARTMENT OF HEALTH, COLUMBUS, O.

FOR three winters the author has been carrying on experiments in a small way in air-conditioning his residence. This paper concerns the basic findings of the first winter's work, at the end of which time a change of residence was made to a gas-furnaced house, which has permitted more definite control of the heating factor. Other influencing factors of housing, auxiliary heating appliances, etc., have remained practically the same. The two past winters have, however, been much milder, especially in that cold spells have been of briefer duration.

### The Problem

The specific problem whose solution was attempted in the experiments to be described was that of determining whether the average size residence could be air-conditioned, especially in regard to maintaining a proper humidity—40 per cent to 50 per cent—comfortable temperature, and healthful atmosphere during the closed-up season of the year and in a manner to be practical and feasible for the small householder.

### The Place

The experimenter used his own residence, the south half of a brick "double" house, facing west, located in Columbus, O., toward the outskirts of the northern part of the city and on an elevation about as high as any in the city limits,—estimated at one

*The range of temperatures and humidities favorable to man's best performance has been fairly worked out. The problem now is to devise practical means of enabling him to live under these physiological conditions.*

*He cannot avoid active exercise, blanket himself with warm, stagnant air, and eat ill chosen food without becoming an easy prey to infection.*

*A general improvement will follow the wide application of the principles of free ventilation and the variation of air conditions which approximate the conditions of life in the open.*

hundred feet higher than the central portion of the city. A solid brick wall separated the experimenter's portion of the building from the other portion, which was also occupied as a residence.

The building was covered with the usual type of slate roof. The basement was built of stone and cement, with a concrete floor four feet below the ground level. It was separated by solid masonry from its neighbor and all in one space. The basement was capable of maintaining fairly fixed air conditions, therefore acting as a good insulation to the base of the building.

The first floor consisted of three rooms in linear order from front to rear, space being taken off of the

center rooms of the building on each floor for the halls and stairways. A rather massive type of brick front porch, unenclosed, joined directly under one roof to the neighbor's porch on the north side, and tended somewhat to temper weather conditions. In addition, a small unenclosed rear porch protected the kitchen entrance to some extent. Practically complete insulation was provided on the entire north side by the other half of the building, and a large frame residence from five to ten feet distant protected the south side.

The second floor had much the same arrangement as the first, consisting of three rooms in linear order with hall, stairway and bathroom located on inner side of building.

A large attic, unfinished, except that it was tightly floored over two-thirds of its extent, acted as an insulator to the top of the building.

The total cubic space included in the experimental rooms—living room, dining room and kitchen on the first floor, and study and playroom on the second floor—comprising 7,569 cubic feet. Deducting space occupied with furniture, fireplace and chimney extensions, etc., approximately seven thousand cubic feet was the maximum cubic space directly concerned in the experiments.

Hence, the abode consisted of an ordinary sized residence place (one half of a brick "double"), located in a city residence district, rather closely built up and at a good relative elevation.

The experiments were conducted between January 8 and February 17,

\*The full study, with tables, covering the first winter's findings may be found in the Journal of the American Society of Heating and Ventilating Engineers, 1919, xxv, No. 1, pp. 1-14.

1918, which included the continuous extent of severe weather of a rigorous winter. Actual determinations began on January 10 and continued daily with certain exceptions through February 7, when a warmer spell prevailed for about a week, final determinations being completed on February 17, when another cold spell was at hand.

### Factors of Influence

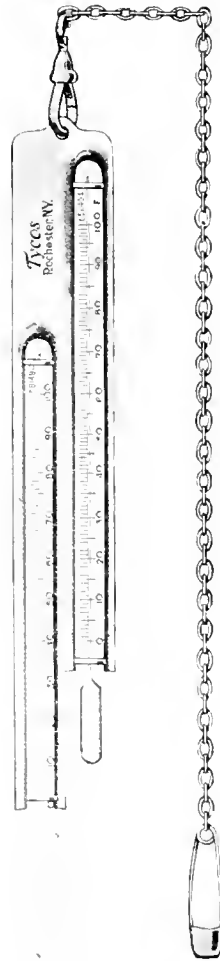
(1) *Protection or General Insulation of the House.*—Because of the construction and situation of the building in relation to neighboring structures, it may be stated that it was perhaps a little better protected from weather conditions than the usual residence, although the elevation of this part of the city permitted probably fuller exposure to weather conditions than is ordinarily the case.

(2) *Special Insulation.*—There were no storm-windows nor storm-doors. However, the looser window sashes and the exterior doors were well weather stripped. Walls and ceilings were lathed except on both outer walls, plastered, and papered. Air filtration leaks and losses of heat by conduction through these were, therefore, to be considered controlled in a fairly thorough manner. (Note, however, the chimney openings of three grates and kitchen.) Hence the brick construction with entire north wall free from openings, the opposing half of building being occupied, the tight basement and large, although unfinished, attic produced, withal, an insulation fully in keeping with, but no better than, the average residence. The flooring on the first floor was double, the upper layer being seven-eighths inch oak, on the second floor single, pine, well varnished.

(3) *Rooms used in Experiments.*—Only the three first floor rooms, and the front room and small rear room on the second floor were included in the experiments, since these were the only rooms where it was attempted to maintain a steady comfortable temperature. A small bathroom on the second floor was omitted as well as a bedroom—the latter unheated. All halls and stairways were omitted. When the furnace was going, the general temperature in the basement ranged from 40 to 60 F. A gas-burner under a non-insulated hot-water tank was going continuously in the basement. This, when the furnace was not in operation, was found sufficient to keep the basement temperature up to at least 32° F. even on the coldest and windiest days.

(4) *Heating Methods and Appli-*

*cations.*—Coal shortage rendered it possible to continue the experiments only the length of time indicated (January 10 to February 17). The furnace, which burned coal, was placed in the center of the basement and had hot-air ducts with fairly good upward slope. It was, by experience, a fairly good heater and in good condition. During the course of the experiments the outdoor cold-air duct was closed and only the basement intake was used. However, considerable inleakage of outdoor air occurred here, as



The type of pocket sling psychrometer used. Readings were made at about the center of each room, the psychrometer being whirled until both dry bulb and wet bulb readings were constant, then both read.

is usual in the ordinary type of damper control of such ducts. The house circulation, therefore, was (a) from the basement into (b) the furnace jacket, then (c) through the various hot air ducts and registers to (d) the rooms above, with whatever returns there were through (e) door leaks and leakages about gas pipe openings, etc., passing vertically through the floors. There were no return ducts or registers either be-

tween the second and first floors or between the first floor and basement. However, the indoor filtration leaks were of some importance in creating a circulation and recirculation of air between floors.

Gas grates were present in the front room and middle room on the first floor and in the front room on the second floor, and were used frequently. All were flue-ventilated (without dampers) to the exterior by chimneys. The kitchen was provided with a gas stove which was also used considerably as a heating unit. This stove was also flue-vented, without damper, by a 4-inch pipe to a chimney of good draft. The study was provided with a portable gas-stove which was used fairly often in addition to furnace supply and the gas-grate in this room. The playroom was provided with an overhead gasplate-heater of the yellow flame, complete combustion type, which was also used fairly often. During the experiments, all doors to other rooms, halls and to the exterior were kept closed with the exception of the necessary moments of ingress and egress.

(5) *The Number of Occupants* is a feature of some importance in the matter of both heat and humidity production, particularly when several may be gathered in one room for some period of time. Persons in the household consisted of two adults and two small children. Rarely were these present at one time in any one room.

(6) *Primary Sense Impression* was carefully noted as an important index to the general ventilation of each room. It was always determined immediately upon entering a room.

(7) General "Room Comfort" in the matter of temperature or air movements after the experimenter or others had been present for half an hour or more was also noted with each determination.

(8) A set of reliable thermometers (eight in number) was hung in the various rooms on side walls farthest from heating units at a height of about five feet from the floor. All of these thermometers were calibrated against the dry-bulb thermometer used on the sling psychrometer, the calibrations being made at different degrees of temperature in approximately 10° intervals from 50° to 100° F.

(9) *Psychrometric Readings.*—A pocket type sling psychrometer of first class quality and accuracy was used (Fig. 1). Readings were made at about the center of each room and at the same place always. The



psychrometer was whirled for a minute or two until both the dry bulb and wet bulb readings were constant, then both were immediately read. Distilled water, which stood in covered glass tumblers in each room, in order to insure "room temperature" of the water used, was used for moistening the wet bulb. Relative humidities were determined by consulting a psychrometric table in the usual manner.

(10) As each indoor psychrometric reading was made, the *outdoor temperature*, as indicated by a standardized thermometer hung on the building wall on the back porch was also read.

(11) *Official Weather Conditions.*—At the completion of the series of experiments, in response to a request made to the Director of the local Columbus Weather Bureau, the experimenter was supplied with a report of the weather conditions in regard to (a) temperature, (b) relative humidity, (c) wind velocity, and (d) wind direction for each of the hours corresponding to the readings made in the home experiments. Only occasionally did the official records as to temperature vary more than two or three degrees from those noted by the back-porch thermometer, in which cases official records were invariably more extreme than those given by the experimenter's thermometer, which was therefore on the safe side. The experimenter did not attempt any psychrometric readings out of doors.

(12) *Temporary Disturbing Factors* consisted principally of laundry work, weekly, in the basement where an additional gas plate heater, under a clothes boiler, and the escape of some steam and moisture from clothing hung up to dry, played a certain small part in improving humidity conditions. In a lesser way, some types of cooking in the kitchen produced some humidity. As, however, but few quarts of water at the most were evaporated by these means, such influences were not of much importance.

(13) To increase air movement an eight-inch electric fan, driven at the medium of its three available speeds, was placed in the basement intake to the furnace and kept running for periods of from two to six hours previous to making readings. As noted by the rush of air out of the registers, this very materially improved the circulation of the air throughout the house. No attempts were made to estimate air velocity, air displacement or air direction in various rooms,—the variations in these factors being, of course, great, but these factors no

different than in all inhabited quarters, where they are necessarily controlled sufficiently to insure more or less comfort.

(14) A *Humidifying Apparatus* was installed in an opening in the slanting portion near the top of the furnace-housing so that the water spray continually played on top of the dome of the firebox within. This device works on the atomizer principle, although in order to get sufficient water into the air with the city water pressure available (14 to 25 pounds), it was often necessary to have the particles of rather larger size, on the average, than could be called "fog." So far as could be seen, this proved no detriment provided evaporation took place, which in turn depended mainly upon the heat in the furnace. Except for certain experimental purposes, the device was kept going for at least a half-day period before readings were made in the rooms above and on some runs was in continuous operation for forty-eight hours at a time. The amount of water supplied by the device was within easy control of the experimenter. In the early experiments it was found that not enough water was being used and hence humidification effects were only slight or nil.

(15) The drying surfaces of the house were those ordinarily present, such as rugs, varnished furniture, clothing, wall paper and varnished woodwork—all of which, as it is well known, have a most remarkable capacity for absorbing moisture, at least in the first few days of artificial humidification attempts. When all of these have reached a condition of moisture saturation in general keeping with that of the air, these factors practically cease to be of importance as atmospheric dehydrating agents.

(16) Auxiliary heating by natural gas appliances was used quite extensively because of the severity of the weather and the shortage of coal, and it early became apparent that the burning of natural gas in a room, in itself, had a marked influence on humidity relations, its use being accompanied by a concurrent rise, invariably, in the humidity readings. Therefore, so far as the efficiency of the humidifying device was concerned, only such readings as were made when a minimum amount of, or no, gas heating accompanied were taken.

It will be seen that the total number of devices used in these air-conditioning experiments in the abode in question (in addition to the building construction with the amounts of insulation and air leakage indicated)

were (1) an ordinary, hot-air furnace, coal heated; (2) gas-grates, gas-stoves, and one overhead gas-heating plate—all burning natural gas; (3) standardized thermometers, one hung in each room; (4) an eight-inch ordinary electric fan placed in the basement opening of the cool-air inlet at the side of the base of the furnace; (5) a humidifying apparatus connected to the water supply; (6) a pan to catch the overflow from the humidifying apparatus; (7) the city water supply, which ranged between 14 and 25 pounds' pressure, as gauged in the basement, and (8) a pocket sling psychrometer with accompanying psychrometric chart and some distilled water (placed in covered tumblers in each room for moistening the wet-bulb thermometer). Other essentials in conducting the experiments were observations as to weather conditions, including official local reports corresponding to the hours when the home readings were made, notations as to the number of persons present, and the presence or absence of temporary disturbing factors.

### Experimental Findings

Tables showing the results of the experiments are omitted because of lack of space, but the following summaries give the essential facts of each table:

(A) *Experiments in rooms heated by direct gas-heating appliances (grates, stoves and plates).*—In 24 experimental readings made in comfortable living rooms, the experiments made on 13 different days (between January 10 and February 17) with outdoor temperature ranging from 0° to 38° F. and outdoor relative humidities ranging from 63 per cent to 91 per cent and wind velocities from four to twenty-six miles per hour, it was found that the *relative humidities* within the rooms ranged from 37 per cent to 68 per cent. While this does not constitute an ideal condition (60 per cent relative humidity), it conforms to the conditions which are usually laid down as practical of attainment. It would, therefore, seem that no artificial humidification is needed in rooms thus heated (direct heating by grates, stoves and heating plates burning natural gas in the air of the rooms).

(B) *Experiments with hot-air furnace.*—In ten experimental readings made in "comfortable living rooms" (as regards temperature), made on seven different days—between January 4 and February 4—in which heating was by the ordinary hot-air furnace, with outdoor temperature ranging from -6° to 16° F., outdoor relative humidities from 63 per cent to 87 per cent and wind velocities from two to thirty-two miles per hour, it was found that the indoor relative humidities ranged between 15 per cent and 50 per cent, all but two falling

between 15 per cent and 33 per cent. Hence these experiments bear out the statements made by others that the heating of premises by such indirect methods as the hot-air furnace results in great aridity and shows the necessity for providing for humidification of the heated air.

(C) *Experiments with cool rooms* ( $59^{\circ}12'$  to  $35^{\circ}$  F.)—In fifteen experimental readings made on eleven different days in rooms whose temperatures ranged between the limits stated and which were miscellaneously heated (hot-air furnace and gas appliances) with outdoor temperatures ranging from  $-5^{\circ}$  to  $30^{\circ}$  F., outdoor relative humidities between 56 per cent and 95 per cent and wind velocities from four to forty miles per hour, the indoor relative humidities ranged between 30 per cent and 64 per cent, nine falling between 44 per cent and 64 per cent. These experiments simply show that as temperatures decrease below the point of comfort in living rooms there is some compensation in the fact that the relative humidity increases to an amount which may be equivalent to the ideal (60 per cent). The cold, damp atmosphere resulting, however, is not to be advocated.

(D) *Experiments in artificial humidification using hot air furnace.*—In twenty-eight experimental readings made in "comfortable living rooms," the experiments made on 10 different days (between January 13 and February 5) with outdoor temperature ranging from  $-2^{\circ}$  to  $24^{\circ}$  F. and outdoor relative humidities ranging from 56 per cent to 91 per cent and wind velocities from three to twenty-nine miles per hour, it was found that the relative humidities within the rooms ranged from 29 per cent to 58 per cent (all but seven scattered readings—the lowest of these 29 per cent—falling between 38 per cent and 58 per cent). This is, for practical purposes, the normal condition desired. This experiment, therefore, shows that it is practical, with only the outlay described, to humidify artificially the average size and type of residence and include proper humidity as an element in the "comfortable living rooms."

### Observations and Deductions

(1) The "comfortable living room" atmosphere may be defined as one in which there is (1) a barely perceptible circulation of the air, yet without draft; (2) temperature not depressingly high nor uncomfortably low with heat more or less evenly diffused throughout the rooms; (3) a degree of humidity which is neither high enough to be depressing nor low (dry) enough to be irritating, and (4) the absence of obnoxious gases, as those escaping from stoves or grates and, obviously, dust, smoke, or disagreeable odors. We may standardize the principal items in the above, and thus be more certain of a "healthful" as well as a "comfortable" atmos-

phere. The air should move at a velocity of about one foot per second; its movement should be varied in direction; and it need not be over  $68^{\circ}$  F. temperature, provided the degree of saturation with water vapor amounts to about 40 to 50 per cent.

(2) In air-conditioning buildings such as residences the chief problems to be considered and controlled are as follows:

(a) Movement of the mass of air to overcome stagnation and stratification (indirect heating, as by the hot-air furnace, easily accomplishes this while great improvement can be observed by the added use of the electric fan).

(b) Prevention or control of heat loss from the building through the two chief sources: (a) direct filtration of heated air outward and ingress of cold air into the building (these air changes take place rapidly about doors, windows, baseboards, floors, and especially chimney flue openings) and (b) direct conduction of heat through walls, window panes and floors (these are usually sufficiently insulated against by proper building construction, which includes intervening "dead" air spaces).

(c) Loss of water vapor which may have been added to the air for bringing up the humidity requirements.

It will be seen, therefore, that the question reduces itself practically to one of heat and humidity control, part of which is accomplished by correct building construction and the balance of which may be secured by the usual type of hot air furnace and a humidifying device.

(3) Unless double windows are used and outer walls are efficiently insulated, there will be an accumulation of moisture on the roomside of these otherwise cold surfaces. Surfaces of the interior of rooms must approach in temperature that of the room atmosphere or moisture deposits may occur. In the residence described, window panes, only, became steamed or frosted. Unquestionably, double windows would have avoided this. However, there is no evidence that such condensations upon windows or walls become a hazard to the health of occupants.

(4) It was found that a small electric fan turned on for an hour or so three times a day was sufficient to "get the heat out of the furnace," and along with it any added humidity.

(5) When outside temperatures mount above the freezing point ( $32^{\circ}$  F.), at least in the locality in which these experiments were made, it does not appear that artificial humidification of residential atmosphere is necessary. This means, therefore, that, on the whole, the season making such humidification desirable in this part

of the country is not only briefer than is commonly supposed, but that during the cold season many days occur when the outside temperature is above the freezing point. With the persistence of outside temperature below the freezing point, indirect heating methods such as the hot-air furnace, produce an excessively drying tendency, or "dryingness" of the air which should be corrected, both on account of the damage to furniture and decorations as well as for health reasons.

(6) Heating of rooms by naked (natural) gas flames (grates, stoves, etc.) results in an amount of atmospheric humidity which is apparently sufficient (40 per cent to 60 per cent saturation). It was not determined whether this increased humidity comes from the oxidation of hydrogen in the gas or whether it is any more than would result from the presence of any form of naked fire in the room.

(7) Very few precision instruments are needed to measure the quality of a healthful atmosphere. Some of these the householder may do away with and rely upon "primary sense impression" and "comfortable room temperature" as guides. No doubt a little increased watchfulness, or increase in the acuity of the senses, is necessary and may be cultivated.

(8) The effectiveness of any humidifying device is a very relative matter. Much depends upon the control of the heat-loss and moisture-loss through filtration leaks, direct conduction and evaporation. It is conceivable that in quarters insulated against such losses, any humidifying device, in time, would succeed in completely saturating the atmosphere with moisture. Under these conditions, for example, the moisture which a mouse exhales with each breath would in time humidify to saturation a large auditorium. Hence the question of the efficacy of humidifying devices appears to be: "What will supply enough moisture in a few hours' time to bring about a relative humidity of from 40 per cent to 60 per cent in spite of the chances for losses which exist in the ordinary place of residence?" As the experimenter's observations, which correspond with those of others, are to the effect that it requires from a few to twenty or more gallons of water per day (depending upon the temperature of the air to be heated and its rate of escape from the building) to get enough water vapor into the air, it is obvious that some continuously operating device connected with the water supply of the building is the most practical solution. An atomiz-

ing device can be made to accomplish this.

(9) Observations in a number of experiments bore out the statements of others that when *relative humidity* mounts to from 45 to 60 per cent "room comfort" becomes "O. K.," even when thermometers about the rooms record as low as 60 degrees F. While this indicates that a lower temperature than is customary is comfortable under properly humidified air conditions, it does not mean that any less "heating," i. e., consumption of coal, is taking place, since the heat is simply being used at the furnace to evaporate the moisture which comes in contact with the heated air and the furnace box. It does, however, render the living atmosphere more healthful and comfortable, since it does away with the necessity of excessive heating (70 degrees to 80 degrees F.) in order to feel comfortable on cold days. The cost in fuel is probably about the same.

(10) The apparatus needed to bring about "proper air conditions" by the householder is (1) a hot air furnace of ordinary type and an arrangement for air circulation in the rooms and back to the furnace (this return being accomplished either by registers between floors or by loose door and floor constructions, or by leaving stairway doors ajar); (2) a humidifying device, costing about twenty-five dollars, with from three dollars to five dollars additional cost for its installation, the same to be connected to the hot air furnace; (3) a small portable electric fan, costing about ten dollars—the same one used in the summer season for cooling and ventilation; (4) a couple of thermometers costing about one dollar each; and (5) a hygrometer or psychrometer, costing from four to ten dollars. The cost of the amount of water used is insignificant, while the cost of electricity amounts to a few cents a day at the most (the use of the fan for four to six hours). The time necessary for regulating the humidifier and the fan should be made to correspond with that of tending to the furnace, at which place all three are under control.

(11) For brief cold snaps, a temporary expedient for humidifying the air of the house consists in keeping a section of the basement floor near the furnace wet with a hose. Keep the basement intake to the furnace housing open, close the outdoor intake, turn on the electric fan (placed as before), and force the moistened air throughout the furnace distributing system to the rooms,—the air to be re-

circulated to the basement as above explained.

The usual schemes adopted, such as water pans in the side of the furnace

or attached to radiators, etc., unless actually evaporating many gallons of water per day, are practically worthless as room or household humidifiers.

## A Hotel for English Children

THE health and happiness of the home depend upon the efficiency of the mother and upon her fitness to be on constant duty. Where ill health on the part of the mother incapacitates her, the whole family suffers. Most of all, the little child is neglected both to its own hurt and to the further complication of an already difficult situation.

The uncared for children often offer the greatest obstacle in the way of the complete restoration of an ailing mother and are often the most complex problem of the health worker. The same difficulties are continuously before the working mother. It has been repeatedly shown that wage earning on the part of the mothers leads to reduced efficiency and impaired health among the children. Everywhere there is too little provision for the care of such children. Day nurseries do not cover the situation.

In London this phase of child care is partly met by the establishment of Beauchamp Lodge Hotel, where children are amply provided for over periods of days, weeks, or months according to the requirements in the case. They are weighed, measured, and cared for as their cases may de-



Keystone View Company.

At Beauchamp Lodge Hotel for Children in London trained nurses are in charge and the utmost supervision is exercised. The institution is a boon for working mothers or for ailing mothers whose households disintegrate during their physical incapacity.

mand. The work receives added importance from the fact that many of the children come from typical working class families in which the food consumed has been shown by numerous studies to be insufficient to maintain normal growth in little children. Whether ignorance of dietaries lies at the bottom of this condition or whether poverty either from individual or social causes is the basic cause, the result is to be reckoned with in terms of shortened life span, lessened periods of productivity, and lowered vigor and intelligence.



Keystone View Company.

The right kind of food in plenty is the order of the day at Beauchamp Lodge Hotel. Here, as elsewhere, contentment is a by product of well being.

# Minimum Health Standards in Schools\*

## No More Urgent Problem Now Confronts the Health Worker Than the Hygiene of Schools

BY LOUIS I. HARRIS, M.D., D.P.H., DIRECTOR, BUREAU OF PREVENTABLE DISEASES, DEPARTMENT OF HEALTH, NEW YORK CITY

IT MAY be stated without fear of contradiction that ventilation is the most important factor in relation to the health of workers. Defects of ventilation are the most important single cause of disease in industry. A statement of all that the term "ventilation" comprehends when it is used by an industrial hygienist, will make clear why it is of such great significance. This holds equally true with reference to the school, because it is proper to consider the school as the industrial establishment in which are engaged thousands who are acquiring knowledge and submitting to character development,—and their teachers as well,—and it is the business environment in which a considerable fraction of the lives of pupils and teachers is spent each year.

It is commonly understood that ventilation implies the furnishing of an adequate supply of fresh air to a given room, factory, or other space. The industrial hygienist, however, is not merely concerned that the air which is furnished should be adequate in quantity, but that it be free from contamination both before and after it enters a room, and that dust, bacteria, or the exhalations and emanations of the human body and the gases generated by the burning of gas lights are effectively withdrawn; that the air is of suitable temperature and humidity; that it is kept in motion so as not to stagnate; and that it should not be delivered in such manner as to drive it through a given space or room at a great velocity, thus creating a draft. The air supplied must be distributed to all parts of the room, a matter that is especially important when mechanical ventilation is depended upon.

Natural ventilation through windows or skylights is by far the best. If ventilation is obtained through natural means, that is, by an adequate supply of windows or skylights, it obviously implies that lighting will at the same time also be improved. When, because weather conditions are unfavorable, or structural arrangements are old or defective, or when for a variety of other reasons, it is

*The why of school hygiene needs hardly be argued. The how is open to much investigation. Engineers are everywhere working out means of maintaining the optimum conditions and formulating standards of equipment which should constitute the universal minimum requirement.*

*The chief difficulty, however, is with old equipment which has been "good enough" in the past. Too many schools are still dingy, dirty, and insanitary, and appropriations for maintenance and renewal are far below the actual need. When will the public come to a realization of the physical needs of the public schools?*

advisable to depend upon natural ventilation, one must reinforce or replace it by resort to artificial methods of ventilation which depend upon fans to propel air into a room as well as to exhaust or remove contaminated air. Frequently, artificial ventilating devices, even though they may have been installed at very great expense and at considerable trouble, have been found to be defective and impracticable in operation. Even when a mechanical system of ventilation is found necessary, it does not justify failure to open windows at all times when the weather conditions permit.

### New Ideas of Ventilation

The latter statement is in direct conflict with the views which have heretofore been held and enforced with reference to this subject, and as the result of which no one has been permitted to open windows while ventilating devices were in operation. Authority for this new view is, however, to be found in the special report made by the Divisional Committee on Heating and Ventilation of the Committee on Welfare of the Advisory Commission, Council of National Defense. This most important report was prepared by some of the foremost engineering authorities in the Country. For the sake of emphasis, and to overcome the harmful effects of wrong teaching which has

been in force hitherto, it is desirable to repeat that the installation of a mechanical system of ventilation in rooms where the natural agencies for ventilation fail or are found insufficient, does not justify the old theory that the opening of windows in such rooms destroys the effectiveness of mechanical ventilation when the latter is in operation. From a hygienist's point of view, quoting the exact words of the report above referred to, "a room cannot possibly have too many windows, nor can they be opened too often or too much when the external weather conditions permit."

The report of the Divisional Committee on Heating and Ventilation of the Council of National Defense, which has already been referred to as an authoritative guide, unfortunately does not make adequate provision for the amount of space to be furnished each occupant of a working place. A minimum of four hundred cubic feet of air space per person should be insisted upon; six hundred cubic feet per person is the optimum. While it is our business to urge and compel children who cough or sneeze to cover up their mouths and noses with their handkerchiefs, we must nevertheless provide an adequate amount of space for each child in a classroom, so that it will be out of range of the discharges from a sneezing or coughing neighbor; this is a necessary measure of protection against contact infection. For this purpose, a minimum of twenty square feet of floor space is necessary for each child in a classroom. In apportioning the above amount of space, it is not intended that one should include in such computation those areas of a room which are not used for seating purposes; the aisles, however, may be included in such computation. For the purpose of adequate ventilation, rooms should be required to have a sufficient amount of window space so as to allow twenty-one square feet of window area for every occupant of the room; such windows, however, should open directly to outdoors. When the area of the window space for each occupant averages less than twenty-one square feet in a given room, it calls for the installation of a mechan-

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ical method of ventilation to supplement natural ventilation. When a mechanical method of ventilation is necessary, the minimum amount of air space should be not less than six hundred cubic feet of air per person per hour.

If, for example, you have a classroom in which there are forty children, and you have only seven hundred square feet of window area instead of the optimum 840 square feet, then you have a deficiency of 140 square feet of window area in such room. For each square foot of window area that is lacking, one hundred cubic feet of air ought to be supplied for each occupant per hour. In other words, the mechanical ventilating device must compensate for the deficiency of window area in the room by supplying 140 times 100 cubic feet of air for each of the 40 pupils. While the essentials of this calculation concern only the engineer, they are offered in this connection to show that it is not sufficient merely to have an elaborate ventilating device in the room, but that the amount of air which is delivered must be accurately regulated. To be satisfied merely with the placing of a flag in front of each ventilator and to accept its fluttering as an indication that all is well, as has been the custom in many schools, is to place reliance on a very poor index of efficiency. Moreover, all locker rooms or wardrobe spaces should be adequately ventilated. In this connection, it should be pointed out that the ordinary method of storing clothes is one which is not conducive to safety or good health, unless a proper amount of space exists between the clothing of each individual child, so that there may be no point of contact, and unless the space in which clothing is stored is well ventilated and well lighted. The sterilizing effect of sunlight not only upon the air of rooms which must be breathed by persons, but also upon the air of locker spaces must not be overlooked.

The air must not be discharged with velocity at some one point in a room to the inconvenience of some of its occupants but should be properly distributed throughout such room. Children who are seated near the windows in a room where natural ventilation is depended upon, should be guarded by a deflector—an inclined glass or wooden shield placed across the lower end of such windows, to deflect air currents entering such room upward so that they will not directly strike such children. In a similar fashion, children who are

seated near radiators or other heating devices may suffer from the effects of excessive heat. Such radiators should be properly insulated by non-conducting material (asbestos, etc.) and the heated air should be deflected upward, or better still, the radiators or heating units should be so distributed as to be at a distance from children's seats.

### Absenteeism and Ventilation

In a study made by Dr. S. J. Baker, the director of the Bureau of Child Hygiene, it was shown that in the closed-window room which was ventilated mechanically and kept at a temperature of about 58 degrees F. the rate of absences as the result of respiratory disease was 32 per cent greater than in the open-window rooms which were naturally ventilated and kept at the same temperature. The best condition of health with respect to the prevalence of respiratory diseases is found to obtain in the open-window classes. At comparatively frequent intervals, as at the end of each period, all windows should be opened and ventilated, preferably while the children are for the time being out of the room, or, if they must be kept in the room, while the children are exercised. Frequent changes of air are not only conducive to better health and comfort but make for increased efficiency. Where mechanical methods of ventilation are depended upon, a "wet and dry bulb thermometer" should be supplied in each such room, and the teachers should be made familiar with the reading of such thermometers so that they may estimate the relative humidity which should be at least 20 per cent for any given temperature. A special chart or table is furnished with each such thermometer which enables the teacher after a very brief experience to make the necessary computation. For the average room, a temperature of 68 degrees F. is most desirable from the standpoint of health.

### Lighting Features Important

While proper lighting has not the importance of ventilation in relation to health, it is nevertheless of considerable significance among pupils and teachers because it prevents eye strain. The latter condition may be responsible for serious suffering or discomfort which may be manifested by headache, irritability, lack of attention, fatigue, and be the cause of distant or so-called "reflex" disturbances which may be referred to the stomach or to other parts of the body.

Dr. Ralph E. Wager of the Department of Biology, Northern Illinois State Normal School, in his study of the health of teachers calls attention to the marked prevalence of defects of eyesight among them.

There can be little doubt that a defective system of lighting may not only react to make teachers and pupils irritable, restless, and fatigued, but that it may be responsible for the backwardness of many pupils. It is not sufficient to depend on visual tests to discover such defects of eyesight; it is infinitely better to correct improper lighting. Seating arrangements should be of such character that the light falls over the left shoulder, and the arrangements of seats as well as the location of blackboards should be ordered so that they may not be placed at an angle which interferes with vision and produces a glare. It can be stated definitely that where natural or artificial lighting is used, the writing surfaces, whether blackboards or desks, should be neither too brilliantly lighted so as to reflect glares, nor should there be marked shadows upon them. When artificial lights are employed, care must be taken that they should not flicker. Those who are in the habit of reading newspapers or books in the subways can testify to the blinding effects of flickering lights, recently so conspicuous, and they will readily understand how this condition may cause serious eye strain.

### Engineering Requirements

In connection with adequate lighting, it is well to bear in mind the three requirements which are always insisted upon by leading engineers; namely, *sufficiency* and *continuity* of light, and *diffusion*. The sufficiency of light depends upon having an adequate window area. In order that there may be continuity, it is not only necessary to have a large enough window area for use on comparatively dark days, but there must be provided also one or two things—first, a way of reducing light when it is excessively bright, and second, a way of increasing or supplementing it when the days are dark as at the close of day in the winter season or on cloudy days. Lighting engineers emphasize the necessity of having rooms painted in light color, especially the ceilings and the upper portions of walls so that light will not be absorbed by dark surfaces, but be reflected and diffused throughout a room. The lower parts of walls should be painted dark to give relief to the eye. The diffusion of light

calls also for the proper placing or distribution of windows. If the requirements which were specified with reference to the area of window space per person under the head of ventilation are compiled with, the lighting requirements will at the same time be well met. Adequate natural lighting like natural ventilation, is the best. However, we must be careful to prevent the glare of sunshine. In such cases, window shades, especially those which can be raised from below upward, are essential. Windows that have a northern exposure are best for the purpose of lighting. Those that have a southern exposure permit an excessive amount of sunshine to enter during the middle of the day in particular, so that a heavy shade may have to be pulled down to cover the entire window area, thus necessitating the use of artificial lighting during the early part of the day. When sunlight enters through the upper part of the window, it may be modified and made agreeable by having translucent window glass put into the upper sash, or by using light, translucent shades. The light entering through the upper part of the window diffuses over the widest area in the room. For this reason it is desirable to have windows reach to as near the ceiling as possible. The opaque or dark window shade is undesirable. Windows must be kept clean or they will prevent the entrance of an adequate amount of light even though the total area of window space is sufficient.

If the windows look out upon a more or less confined space, and the light is intercepted or reduced by neighboring buildings much can be done to improve the lighting of such rooms by using what is known as prismatic glass. Prismatic glass is supplied in the form of corrugated glass or has little prism-like projections which catch the light from any patch of sky which such windows may face, and reflect or bend the light, and direct it into the room. While clean windows are always a most important essential for adequate lighting, they are of the greatest importance where prismatic or translucent glass is employed, because in these the light is already to a certain degree modified.

When artificial lights are employed, they must be properly distributed so as to give light to all parts of the room; they must be of adequate candle power, and the glare from such light which may fall upon polished desk-tops or other polished surfaces must be eliminated so far as possible

by the use of dull paints and by the proper shielding or shading of the light. The lamps that are supplied must be kept clean or a great deal of the lighting power is lost. The use for ground glass electric bulbs or of ground glass globes has found great favor and is very desirable because it prevents glare. Reflectors are extremely valuable in improving and distributing the light thrown by lamps but they are utterly useless if they are permitted to become unclean. It should also be remembered that a lamp which may give adequate candle power at the beginning becomes worn out with use, and the light therefore grows dimmer. If artificial light must be employed in a classroom, it is advisable not to depend on a single light or a cluster of lights placed in the center of the ceiling, but if possible such lights or clusters should be distributed about the walls or ceiling so as to light up equally well all parts of the room. Any system of artificial lighting which permits marked shadows to be thrown upon any part of the working space or particularly upon the desk, is objectionable and indicates that an improper system is employed. When artificial lighting is employed in classrooms, the optimum amount of light for ordinary use should be four foot candles. A foot candle is the common unit of illumination and is the amount of lighting effect produced upon an object by a standard candle held at a distance of one foot; roughly, one can estimate whether the four foot candles which ought ordinarily be supplied for office work have been furnished by the following very simple mathematical test: The candle-power furnished by a lamp or cluster of lamps is made the numerator; the denominator is the square of the distance of such lamp or cluster of lamps, from the writing surface. For example, if a single lamp, or if a cluster of lamps in the center of the room, gives a light of 200 candle-power, then 200 is the numerator; if the distance from the writing surface of a pupils' desk to the source of light is ten feet then the square of the distance is one hundred feet and the denominator is therefore one hundred. We then have a lighting power of  $200/100$  which equals two candle power; in other words, we have only half the optimum illumination. The minimum which should be allowed for close application is three foot candles; therefore, in the problem cited, the boy who sits ten feet from a two hundred foot candle light is receiving only one-half of the optimum, or two-

thirds of the minimum lighting required.

### Drinking Fountains

All the standards that have been previously outlined have been in agreement with those which are laid down by authorities in the field of industrial hygiene for offices and similar work-places. Continuing to apply such standards, it ought to be emphasized that drinking water ought to be readily accessible on the various floors of school buildings, so that pupils and teachers may not have to lose time in going a considerable distance to slake their thirst. It is the general experience that where drinking water is not readily accessible, there is a tendency to repress the desire for water. The importance of drinking water in adequate amount from the health standpoint, as well as for the sake of comfort, need not be argued at this date. Nor need one dwell upon the dangers which lurk in the use of common drinking cups.

The placing of drinking fountains in sufficient number so as to be readily accessible, is the best means of eliminating the use of the common cup which is always present where the ordinary faucet is used to control the flow of water. The drinking fountain must, however, conform to a modern design or it may give a false sense of security with respect to the transmission of disease. Such fountain must deliver a column of water that rises to a height of several inches. It should be furnished with a metal ring which prevents any person from bringing the lips in close contact with the spout of the fountain. The column of water should not, however, be a vertical one, because it has been found by experience that disease germs which may be on the lips of a person who uses the fountain, may remain supported at the top of the column of water for a very considerable period of time without being discharged into the drain. For this reason, the only proper type of drinking fountain is one which delivers an inclined column of water rising to a height of several inches, the inclination being about 15 degrees, so that any germs which may be caught in such a column of water are not kept dancing at the top, as is the case with the vertical water spout, but fall over into the drain promptly.

### Matters of Sanitation

Toilets should be readily accessible. A great deal of unnecessary loss of time results when toilets are housed in a single unit at a considerable dis-



tance from the classrooms or offices. Moreover, constipation which is of such frequent occurrence among all pupils, and among teachers whose life is a sedentary one, is encouraged when the toilets are at a considerable distance. This is the common experience with large groups of people in industry and undoubtedly applies to the school population.

It is needless to say that the sanitary standards in the construction and equipment of toilets should conform to those laid down for industry, that is, there should be a sufficient number of toilets for the school population; they should be so constructed that the ventilation, lighting, and heating conform to the standards already laid down; they should insure privacy, for it has generally been found that where there is no privacy, there is a tendency toward demoralization through the force of bad example and through the operation of perverted or "crowd" psychology. The material entering into the construction of the toilets should be impervious and non-corrosive, and the construction should allow for proper drainage so that there may be no stagnation or accumulation and exposure of excrement. The windows and doors of the toilets should be particularly shielded during the spring and summer time by the use of screens to prevent the entrance of flies.

It should be remembered that while one hundred eleven typhoid carriers are known in the city of New York, it has been estimated that from 3 to 5 per cent of those who have had typhoid fever remain typhoid carriers, discharging typhoid bacilli in their excrement for many years or for the rest of their lives. In the city of New York, we have had in the last ten years more than twenty-thousand recognized cases of typhoid fever which were reported to the Department of Health. It will be seen at a glance that there must be many more typhoid carriers, even if we limit ourselves to the cases which occurred in the last ten years, than are known to the Health Department. This may include many school teachers or pupils who recover or who may be healthy carriers. The entrance of flies which may have access to excrement that is not promptly and effectively washed away or drained, is therefore a possible source of danger. Therefore, the trough urinal or receptacle in toilets, or the so-called school sinks are a source of danger. Water-flushed and properly sewer-connected drainage is necessary. All

toilet fixtures, together with screens at windows and doors, are very essential to prevent the possible spread of typhoid fever, and of other intestinal diseases through the medium of flies.

Washing facilities in toilets should be adequate. Typhoid carriers are safe to others only to the degree in which they exercise care promptly and thoroughly to wash their hands. Therefore, washing facilities should be available in toilets or near toilets, and also in other parts of the building so as to be readily accessible. A variety of communicable diseases is no doubt transmitted as the result of infection of the hands through contact with the nose and mouth, as well as through possible soiling with human excrement. The supply of washing facilities, and the installation of hot water regulated so as to be of proper temperature, are extremely important from the standpoint of health to the individual pupil or teacher, and to those with whom they may come in contact. The supply of soap and towels in suitable quantity is also extremely important. Measures have been devised which permit one to provide these upon an economical and practical basis. Special paper towels, as well as properly secured cloth towels, are available on the market. It is more economical to prevent disease by supplying proper washing facilities as well as to inculcate proper personal habits in pupils, than to save money by omitting such facilities and fixtures.

### General Cleanliness

Reference has already been made to the economy which results from keeping windows and lighting fixtures clean. The general cleanliness of floors and all furniture hardly needs to be alluded to in the light of modern knowledge. It is important that dry dusting and dry sweeping be eliminated from all schools, no matter at what hour performed, but especially before the opening of school or at any time during the school day. Dry dusting and sweeping tends only to scatter dust and is not effective for its collection and disposal. Mopping of the floors with oil-cloths or with damp cloths or so-called "set-tlers," like oil particles or wet sawdust, is essential and this should be done when the school has been completely emptied of pupils and teachers. In this connection, reference should be made to the chalk dust which is set free in class rooms or which results from the cleaning of erasers. This should be prevented so far as

possible by the use of moist cloths for erasing chalk marks. While this may involve loss of time, it is, however, profitable in the long run. Pupils should never be asked to clean blackboard erasers.

### Rest and Lunch Rooms

In modern industry, it has been found not only desirable but necessary and economical to provide a lunch room where those who are unable for a variety of reasons to secure luncheon at their homes or in restaurants, may find suitable and sanitary quarters to be used as lunch rooms. While this is not important in the school as it is in certain branches of industry, nevertheless in the interest of good housekeeping and comfort, it is desirable so far as possible to have places which are available for use as lunch rooms for pupils and teachers. While a properly fitted up lunch room which has come to be recognized as an essential in the welfare work for those employed in industry, may be difficult to obtain in the schools, there can be no question whatever that a rest room suitably fitted up to permit pupils and teachers, who may be temporarily indisposed or ill, to rest, is necessary as well as desirable. Many absences which formerly occurred in industry because adequate facilities for rest or for emergency medical and nursing relief were lacking, have now been eliminated in industrial establishments which have regard for the health of employees. This has been done by the installation of rest rooms where nursing care or quiet can be obtained and where indispositions were promptly ministered to with the least degree of suffering to those who were so affected, and with the ultimate prevention of more serious developments. Rest rooms have been found to be a "paying proposition," to use the vernacular.

Unfortunately, it is not possible in the brief compass of an article of this character, to dwell upon the necessity for maintaining proper health in pupils and teachers by the observation of rules of personal hygiene which are extremely important, and which if violated will tend to weaken resistance or favor the development of disease. Much could be said about the value of an adequate and proper diet, faulty habits of eating, as well as the use and abuse of exercise, the need for rest periods, the value of adequate sleep, the avoidance of exposure to excessive heat and cold at various seasons of the year, and the relation of proper meth-

ods of dressing to such conditions. Attention to these details is required in the school, as well as outside of the school. The health aspects of recreation and many other topics which are directly related to personal health, might be profitably dwelt upon, but this address was not intended to emphasize these things.

By way of conclusion, it is desirable to refer again to the necessity for adequate medical supervision and study of teachers, with a view to ascertaining their physical condition and fitness at the time of their entrance into the profession, and of the casualties, and damages to health which may be recorded at various stages of their career in the profession, with a view to determining more accurately than has been done in the admittedly limited studies which have been made heretofore. There can be no doubt of the scientific value of studies which concern themselves not only with the results of medical examinations made at the time of entrance into the profession and repeated periodically thereafter, but of careful sickness reports, follow-up, and medical examinations to record the character, duration and the ultimate effects of all illnesses whether deemed trivial or important, conducted over a considerable period of time. In this way alone, will it be possible to obtain knowledge of scientific value and importance in safeguarding the health of teachers and protecting pupils from the physical and mental effects of sickness, to which their teachers may be subject.

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# A Health Center Bibliography

PREPARED BY AMERICAN RED CROSS, WASHINGTON, D. C.

**T**HIS is the second edition, revised April 1, 1921, of a list of references to the general subject of health centers, including a few references to individual health centers and to children's health centers.

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# THE NATION'S HEALTH

(Continuing MODERN MEDICINE)

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## Medicine Fails to Evaluate Physiotherapy

Research Has Come Out of the Chemical  
Laboratory to the Great Out-of-Doors

BY FRANK B WYNN, M.D., INDIANAPOLIS, IND.

THE overweening influence of drug therapy for centuries past, perpetuated through both lay and professional prejudice, has militated against reforms and the introduction of other methods of treating disease. Dignified by age, endorsed by custom, and approved by the profession, medicinal therapy has frowned upon physical therapy as belonging to a lower class—suspected even of being non-professional. The physician who dared espouse these agencies with enthusiasm was at once suspected by the staid profession of having a mercenary ax to grind; if indeed he was not stigmatized as an out-and-out quack.

### Use of Natural Forces

Under the term physiotherapy are comprehended those natural forces which, when properly applied, have to do with maintenance of health, comfort, and even life itself; or when misused or abused, are provocative of disease; and when carefully studied and skilfully applied become most valuable in a curative and preventive sense. Some of the more common of these are: Food and drink; air—cold or warm, stagnant or circulating, dry or moist; light, sunshine, darkness; water—by ingestion or hydrotherapy; heat or cold; exercise—graduated, active or passive; rest—mental or physical; isolation and seclusion; amusement and recreation; interest and occupation.

Have these things received the consideration at the hands of scientific medicine which their importance demands? Through all the tedious centuries of evolution in civilization, these things have, from necessity or choice, been employed, in disease, with real or supposed benefit to the patient. There is in all of us a deep ingrained faith in their efficacy. Whose memory does not hark back to the days of childhood, when a solicitous mother or the benevolent family doctor did not have recourse to them? Even now my senses are stirred by the memory of hot poultices—redolent with onions, mushy with bread and milk, or sticky with flax-seed; of tingling counterirritants and smelly fomentations; of dry heat and moist heat; of hot drinks and cold drinks; of gentle and affectionate hands stroking away pain or limbering up stiff joints; of cheering words and exhortation to patience, faith and grit to go through with a disagreeable job—all that complex which makes up the warp and woof of the childhood of ordinary folks.

Should the profession taboo these common domestic methods of treatment simply because they are universally employed? It were as wise to abandon the use of bread because almost universally eaten by the human race. Finer wisdom would be shown if we set about studying these common things scientifically and applying the knowledge in the conser-

vation of health and the cure of disease. Use them we all do, but how much systematic and thorough instruction concerning them did any student ever receive during his college course? Lengthy consideration and great emphasis were placed upon drug administration, surgical methods of relief, and recently vaccines and anti-toxins, but as for physiotherapeutic measures—these are viewed as mere excusable fillings, designed to calm the mind of the patient, soften the tense anxiety of relatives, and make things easier for the medical attendant. These indisputable truths are strange commentaries on the defects of medical training. When we come honestly to weigh the truth, it is appalling the ignorance of the profession concerning these forces which we should utilize with the finest skill and the most acute intelligence.

### As the Twig is Bent

A few common illustrations may be offered showing the usual bent of professional thought as to the relative value of pharmaceutical as against the physiotherapeutic methods.

A coated tongue, fetid breath, headache, and highly colored urine suggest toxemia, for which the vast majority of physicians will prescribe calomel followed by a saline—missing the larger factor in relief which would come from proper diet, free fluid ingestion, proctoclysis, and properly applied hydrotherapy.

A pale, wan child is secluded in a dark, stagnant room, given iron for its anemia, while its rebellious nature yearns for sunlight and the outdoors. It is taught to abhor circulating air, forgetful of the fact that this very movement of the air heightens its life and blood-making value, just as the ripples and cataracts purify water. It is fed upon broths, when nature craves the succulent, fresh vegetables and fruits—with their scouring, cleansing properties to the bowel, and their chlorophyl content, so potent in blood formation. This delicate child needs these natural blessings and it is one of the highest functions of the physician to know how to bring the little patient under their benign influence. In the early spring-time I plant indoors in boxes the tiny seed, which burst their protective coats, rupture the soil-crust, and thrust their white petals toward the light; actually leaning forward to receive the welcome sun rays; and finally exchanging their anemic palor for the sturdy, beautiful green of the growing plants. Is not this an eloquent sermon upon physiotherapy? Should we be less wise than the unthinking plants regarding the value of sunshine?

Think of the great army of American constipation! The vast majority of these innumerable hosts are women—devotees at the shrine of aloes and cascara. But do even these efficacious remedies work a cure? Let us rather say they establish a habit. If complete relief is to be enjoyed it must come chiefly through the proper application of physiotherapy—copious water ingestion, coarse, bulk-forming and succulent foods, which are both exercising and scouring to the intestines; and that form of bodily exercise which brings the abdominal muscles into frequent and prolonged activity. True, it is difficult to combat the social customs of modern times, the tendency of American women of the so-called upper classes to physical idleness and enervating pursuits. The easy and lucrative way for the profession is to fall in line with indolent habits, the pink teas, card clubs and whirl of social engagements with their irregular hours and excesses—and continue to prescribe laxatives as a routine.

A larger, more wholesome and more permanent service would be rendered the individual and the community by insistently inculcating the doctrine, and following it to execution, of more active participation in the physical labor of the household; of more frequent open-air recreations which de-

velop the muscular system, stimulate pride in physical accomplishments; or, better still, where possible, the cultivation of growing things—flowers, shrubs, fruits, vegetables, etc. More difficult, let us admit, is the execution of such a program than the writing of a prescription. The successful accomplishment of this task requires on the part of the physician, first, the art of persuasion; and secondly, a generalship which plans with far sight for the winning of the battle and brooks no deviation from the orders given. On the part of the patient there is demanded unwavering faith in the wisdom and sincerity of the medical commander and a firm determination to see the thing through to a successful finish. To break one of the habit of chronic constipation is a tedious and difficult task, and is worth a good price. If we would cure, rather than temporize with and cultivate it, we must proceed by the physiotherapeutic route.

### Drugs or Self-Exertion?

Or the subject of consideration may be a successful man of affairs—desk-ridden; plethoric from overeating and underexercising; bowels rebellious under their load; liver enlarged, tender; the skin, icteric; throbbing heart, pounding headache, and high blood-pressure; a man keen, tense, ambitious for large results, and explosive under the nagging irritations of his great responsibilities—how is he to be treated? Shall we seek his relief by draining the gall bladder, chologogue purges, and hepatic stimulants? Should we reduce his blood-pressure by cardiac depressants, or remedies inducing vasomotor relaxation; relieve his headache by coal tar derivatives and quiet his nerves with bromids? One or the other of these things may be indicated. Or may we not with even greater wisdom map out for him an entirely new order of living—holding up perhaps for his temporary emulation the oriental philosophy of passivity rather than the restless, driving ambition of the occidental races; exhorting him to restful contemplation for the sake of his peace of mind; inviting him into the paths of tranquilizing Nature for his tired nerves; for the sweetening of his irritable disposition, suggest the fairyland of wonders and beauties found in the great outdoors.

Of all disease, what is comparable in vital interest, to both physician and layman, with pulmonary tuberculosis? So familiar is the world with its prevalence and ravages, that statistics need not be quoted. Only a few dec-

ades ago its hopeless gloom dampened the ardor of the physician and enshrouded the victim of this malady with despair. Quackery made easy prey of these pathetic sufferers, for in the current of despondency they grasped at straws. Under alluring promises they were persuaded to swallow benumbing narcotics, to induce rest, relieve cough or pain, and stimulants which aroused only artificial strength; finally sinking under the wave of mixed infection and toxemia.

Thanks to the discovery of its cause and a better understanding of its management, we now look upon pulmonary tuberculosis with hope, confident of its prevention, arrest or cure. What has wrought this marvelous improvement? Has it been through the legerdmain of a medicinal potion? Aside from the great value of opium in controlling cough, pain, and restlessness; the reactive tissue repair in some chronic conditions to iodine products, and the use of tonics, what claim can drug therapy make for the extraordinary advancement achieved in the management of pulmonary tuberculosis? Are we not bound to admit that the great blessings of progress in the treatment of this protean malady have come about almost entirely through physiotherapeutic factors; that is to say, in prevention and management we have come to a better understanding of the natural forces—air, sunlight, food, rest, exercise, recreation and occupation?

### Methods Misapplied

Yet with these vast and convincing evidences of progress before the profession, can we truthfully claim that anything more than the most superficial study of these natural agencies has been made? It all seems so simple that we pass it over with trite instructions and immature thought as to details in working out the program. Thus, most unfortunately, the patient gets the impression that the whole scheme of procedure is so simple that the physician is not needed in carrying out the treatment. Taking things into his own hands, the layman fails properly to interpret symptoms and conditions; there is misapplication of physiotherapeutic procedure; and in the end disappointment and disaster result. To illustrate the point more fully:

At one juncture in the course of pulmonary tuberculosis, rest is imperative. Who should know this but the alert and trained physician? If progress towards cure is made, there must come an end even to rest in a

case. Again, who shall call the change to exercise but the experienced observer? Then arises the question of the kind of exercise; the frequency, amount, and the correct interpretation of the body reactions to varying grades of mental or physical activity. Thus it becomes evident that things apparently so simple call for the highest intelligence and judgment; the most painstaking and patient observation; and require most untiring and insistent direction. The successful management of a case of pulmonary tuberculosis, from its recognition, through the tedious years to its arrest or cure, constitutes one of the most difficult problems in medical practice. If gratifying results are attained, they are brought about not so much through drug administration as from the intelligent, patient and painstaking application of physiotherapeutic methods.

The failure of medical education adequately to instruct students upon these important phases of disease management necessarily places a handicap upon hospitals and training schools for nurses. Despite the enormous growth of hospitals in number and structural excellence, their improvement in artistic appearances, hotel conveniences, laboratory and surgical equipment, how many institutions have the physical equipment, for example, to make proper application of hydrotherapy? Must the public continue to depend upon Turkish-bath establishments for refreshing and health-giving hydrotherapy? Do not these latter constitute the physician's chief source of instruction upon this subject, rather than the medical schools or hospitals? How many trained or graduate nurses know anything about the therapeutic bath, other than for sanitary purposes; a cold sponge for hyperpyrexia; or a hot pack for grave toxic conditions? Let us not condemn nurses for these shortcomings, but rather confess our own lack of knowledge concerning the value and methods of hydrotherapy.

### Exercise Works Wonders

Nearly akin to the foregoing are those physical manipulations comprehended under the term mechanotherapy. These include massage, Swedish movement; developing and upbuilding exercises, as in gymnasiums; correctional movements for orthopedic conditions; re-education exercises, as in the ataxia of tabes dorsalis. How many graduate nurses are capable of carrying out these technical procedures? That they do not understand

them is unfortunate; but how much greater the reflection on the medical schools and the profession!

Is it not to the discredit of medical colleges that most of our knowledge concerning these matters comes from the gymnasium and athletic field? Is there anyone of intelligence who has the temerity to claim such things have not extreme value? If such there were, has not the World War removed all question from the mind of the doubter? Who has not seen, by scores and by hundreds, lank, stoop-shouldered, anemic or sluggish youths march away to camp, from counters, shops, and desks, to return in a few months, erect, stalwart, manly looking fellows, with brawn in their muscles, courage written upon their faces, and hope gleaming from their eyes? What is the matter with medical education, if the physician is not able, day by day, to accomplish the same results, through somewhat similar agencies?

### A Narrow View

In protest against the line of argument here offered, the voice of the average physician pleads as follows: "All that you say regarding the failure of medical schools to teach physiotherapeutics, and our ignorance upon these subjects, may be true; but have you paused to consider the monetary sacrifice to the physician which would arise from devoting large time to the carrying out of such measures? People are willing to pay for surgical attention, and for the routine care which involves the administration of medicinal remedies, but they have not been educated properly to evaluate these common natural forces in the management of disease. On our part it means tedious drudgery and poor pay in return."

Such is the prevailing obsession which has long controlled professional conduct. In answer to this line of argument let it be asked if the noted springs and health resorts where hydrotherapy has been emphasized have not yielded a substantial return? Some of these institutions have made commendable effort to set upon their methods the stamp of scientific and professional respectability. The majority, however, most strictly speaking, are only hotels and resting places. In some it is often saddening to find a good record dimmed by the grandiloquent claims of a mineral water. Even such institutions as the foregoing have scarcely kept pace with the public demand for accommodations. The foregoing commercial facts seem to be to controvert the professional fear that hydrotherapeutic methods will not pay.

On turning to manual therapy, as an avenue of lucrative return, is it not true that within the past ten years, quasi-professional men, chiefly of mediocre education, and the most brief and superficial training in the fundamental branches of science, have carried manual therapy to a point in public esteem where it receives credence and support from many intelligent laymen? There are five hundred chiropractors in Indiana alone, and two thousand students of chiropractic in an Iowa college. We cannot ridicule these sects out of existence. We may rail at their brazen pretense, declaim against their ignorance, and justly arraign their reckless action in treating serious cases which they know nothing about, but they go merrily on the highway to business success. Is the numerical growth and achievement of osteopathy and chiropractic merely the result of bold advertisement and humbug, or is there back of it all some germ of truth which we have overlooked or refused to see? If so limited a phase of physiotherapy can be made to pay financially by those poorly equipped, how much greater should be the monetary benefits which might be expected if well-trained physicians made scientific study and intelligent application of the broad problem of physiotherapy.

### The Branch is Not Taught

The main purpose of this discussion is to show that the medical profession has failed to measure up to duty in the study and application of the common natural agencies, in relation to the cause and cure of disease. We have failed (1) because medical schools have not taught these things thoroughly or systematically; (2) because hospitals have not provided the facilities or a staff of instructors thoroughly competent to instruct; and (3) because nurses have not received efficient instruction in carrying out the methods. Foundations and endowments have been lavish in appropriations of money for the study of pathological and chemical problems relating to disease; but where have large sums been expended in the study of heat, cold, light, air, water, rest, exercise, manipulation, or vocation, in relation to disease? Our very neglect to give these subjects the attention they merit in therapy has been more responsible than aught else for the development of recent sects in medicine. If we would, therefore, prevent the tendency to erratic and sensational

offshoots from medicine, let us give no substantial excuse for their origin. Behold the rapidly increasing flood of irregular practitioners, most of them conscienceless pretenders or mercenary commercialists seeking shortcuts to the rights and privileges of med-

ical practice. Shall we allow them to possess the domains of legitimate medicine? However venal and commercial may be chiropractic and its kind, let not this fact prejudice us against the germ of truth they may contain. Our duty should be to gar-

ner the grain but cast out the chaff—educationally and professionally. Let the medical profession, aroused to full consciousness of duty, reclaim and cultivate with scientific and clinical thoroughness a neglected field—physiotherapy.

## Organization for Public Health in Ohio

### Efficient Organization Ultimately Means Less Sickness and Fewer Deaths Throughout the State

BY ROBERT G. PATERSON, PH.D., EXECUTIVE SECRETARY, OHIO PUBLIC HEALTH ASSOCIATION, COLUMBUS, O.

OHIO was one of the first states in this country to organize a voluntary association to combat tuberculosis. The Ohio Society for the Prevention of Tuberculosis was organized in 1902. Beginning with this date, the Society has been actively identified with every measure put forth to control tuberculosis in the state. As our experience and understanding of the problem grew, our interests widened, until at the present time the name of the Society has been changed to the Ohio Public Health Association to indicate publicly the new work which the Society desires to promote.

#### State Voluntary Organization

The Ohio Society for the Prevention of Tuberculosis was organized in the offices of the State Board of Health in 1902. Funds were raised through

membership dues. In addition to the educational work which was carried on, the Society initiated legislation which provided for a commission to study the feasibility of establishing a state sanatorium for tuberculosis; secured legislation for the establishment of the Ohio State Sanatorium; and was largely responsible for the passage of legislation for the establishment of county and later district tuberculosis hospitals. The period covered by this work was from 1902 to 1911 in which was laid the foundation for the future work of the Society.

In 1911 the Society began a new period in its life due to the advent of the Red Cross Christmas Seal as a means of raising funds for tuberculosis work. The Society was enabled to employ an executive secretary to devote his full time to the

work: a survey of the tuberculosis situation throughout the state was undertaken, a result of which led to the adoption of a program of work to be accomplished. Two items in that program to be noted at this time were the inclusion of tuberculosis as a notifiable disease by the State Board of Health in 1912 and the appropriation of twenty thousand dollars a year for the establishment of a bureau of tuberculosis in the State Board of Health organization in 1913.

This Bureau was the first of its kind in the United States and its establishment at the time led to many misgivings on the part of tuberculosis workers that politics would play an important rôle in determining the future tuberculosis work in Ohio. These misgivings have proved to be unfounded. The greater gains to the tuberculosis campaign by having funds provided out of taxation for carrying on the various forms of work which have been tested and proven successful is generally accepted today.

At the present time the program of the Ohio Public Health Association includes plans to:

- (1) Supplement and assist the State Department of Health.
- (2) Establish local public health leagues paralleling the local official health organization to accomplish locally the same results which the State Association strives to obtain on a state-wide basis.
- (3) Develop a state system of public health nursing.
- (4) Assist the Ohio State University in the establishment and conduct of courses for the training of health officers and public health nurses.
- (5) Coordinate a program of public health legislation.
- (6) Carry on a continuous campaign for the prevention of tuberculosis and conduct educational propaganda on public health matters.

An important step in advance in health work in Ohio took place when the Wright Bill to reorganize our



Typical cottage at the Ohio State Sanatorium, Mount Vernon, O.



State health administration became a law in 1917. This law abolished the State Board of Health consisting of seven members appointed by the Governor. Each member was appointed for a term of seven years, one appointment being made each year. The Board appointed the secretary annually and he served as the state health officer. The laws of Ohio placed practically all of the executive power in the Board, which made it necessary to await the convening of the Board in regular or special session before matters could be decided. The law of 1917 created a State Department of Health consisting of a public health council of four members and the State Commissioner of Health. Council members were appointed by the Governor for a term of four years, one appointment being made each year. The Council elected the State Health Commissioner for a term of five years and the Governor approved his election. The executive and administrative functions of the State Department of Health were lodged with the State Commissioner of Health. The legislative and judicial functions were placed with the Public Health Council. This change has made it possible to accelerate the administrative health work of the state to a degree impossible under the former plan of organization. Under a general reorganization of state departments authorized by the Legislature, effective July 1, 1921, the method of appointment of the State Health Commissioner was changed. The reorganization bill provides for appointment of a State Director of Health by the governor for a term co-extensive with that of the governor, retaining the public health council with legislative and judicial powers only. This change was opposed by the public health organizations of the state. The term of the governor is limited to two years under the constitution, which means that there will likely be a change in the office of director of health with each change of administration. There is strong sentiment in the state for a change in this law which will insure a longer tenure of office for the head of the state Health Department and keep the health machinery of the state free from partisan politics.

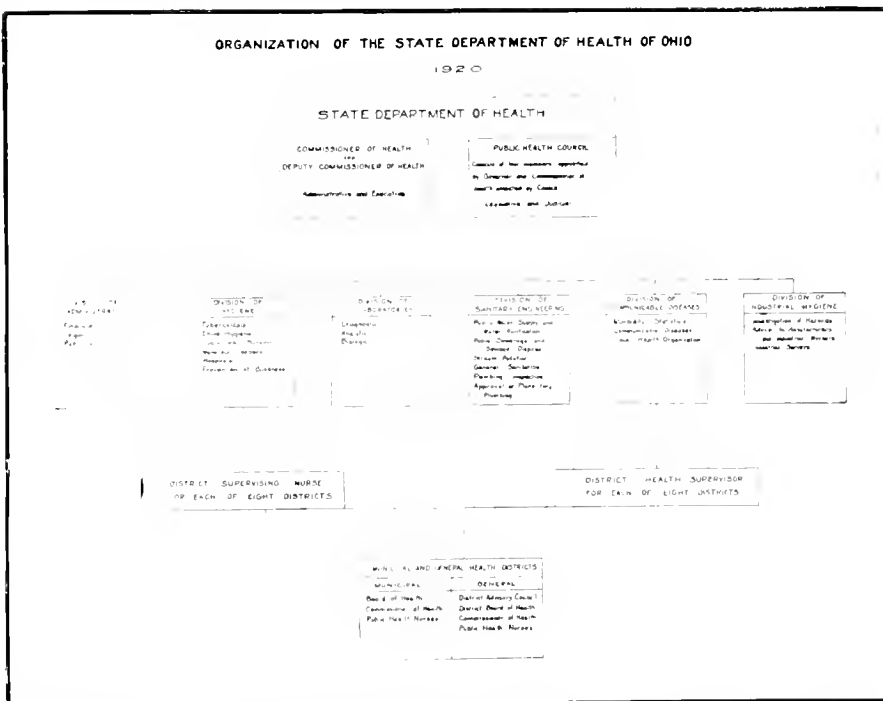
The next item in the program embraced an entire reorganization of the local health administration under the Hughes-Griswold Law of 1919. There were 2,150 health districts in Ohio under the old law. Every township board of trustees constituted a board of health. Every incorporated

municipality had a board of health. The actual results of this system were five full time health officers and the remaining 2,145 health districts in the hands of part time men who had no previous qualifications other than that they happened to be clerks of the board of township trustees or practising physicians willing to assume the responsibilities in the municipalities for little or no compensation. Under this system, while the legal responsibilities for providing health protection were lodged with local authorities, the actual burden was placed with the state authorities because of the absolute inability of the local boards of health and their health officers to meet the situations which confronted them. The Hughes-Griswold Law provides for a general health district in each county in the state embracing all the territory in the county outside of municipalities. Each city of five thousand or more population is created a municipal health district. Each general health district has a board of health of five members which appoints the health commissioner. There are eighty-eight general health districts as provided by the law. Two districts have no health commissioner. Eighty-six have health commissioners. Seven general health districts have combined with municipal health districts and jointly employ their health commissioner. Of the remaining seventy-nine general health districts,

forty-two have full time and thirty-seven part time health commissioners. All of these commissioners are physicians, as required by law. There are eighty-one municipal health districts. Seven have joint commissioners with the general health district, sixteen are full time and fifty-eight are part time commissioners. While a majority of the commissioners are physicians, the law does not require that they shall be.

The ultimate effect of this reorganization in reducing the mere number of local health authorities from 2,150 to 169—eighty-eight general health districts and eighty-one municipal health districts—with the increase in efficiency of the local authorities in dealing with local health problems, can lead in due time to but one thing; less sickness and fewer deaths throughout the state.

One of the most important items in the program of the Ohio Society for the Prevention of Tuberculosis adopted in 1911 was the belief in the public health nurse as a vastly superior agent in the prevention of disease over the prevailing type of sanitary officer. In the year 1911 there were twenty-five public health nurses employed in nine cities in the state. The Ohio Society began the development of a state system of public health nursing by advocating the employment of public health nurses by the local anti-tuberculosis societies. Legislation was secured to make it pos-



Reorganization of the public health work of Ohio as effected under the Wright Bill of 1917. Members of the Council are appointed by the governor, one each year, serving for a term of four years.





The Tuberculosis Sanatorium at Warrenville, O., serving Cleveland and Cuyahoga Counties, is an outstanding demonstration of right method.

is engaged in the task of securing local support for the appropriation of money raised by taxation for all of the foregoing purposes. In addition, the Association is carrying on a program of health education in the schools of the state through the Modern Health Crusade sponsored by the National Tuberculosis Association. The end in view is the adoption of a health curriculum as a part of the state system of education under the supervision of the State Superintendent of Education. One method adopted to secure this result is through the pageant, "Health Wins!" which has been specially prepared and produced for the Association. The pageant is given in local communities throughout Ohio and is dependent for its success upon the cooperation of

the school authorities, and the school children. It is expected that sufficient support will be developed at the next session of the legislature to secure the adoption of the health curriculum and sufficient appropriations for its supervision by the State Superintendent of Education.

The guiding principle adopted by the Ohio Public Health Association ten years ago has been that public health work, to be successful on a large scale, must be financed out of public taxation. The function of the voluntary health organization is to initiate and demonstrate methods and then to secure their adoption by the state through legislation and taxation. The state voluntary associations as well as local voluntary leagues must keep their organizations

free from official control. Their primary purpose is to aid the state and local health officials in building up their organizations and then in maintaining them

### Infantile Paralysis—A Message to Parents

The Visiting Nurse Association of Chicago has issued a booklet which summarizes authoritatively the nature, symptoms, and ravages of epidemic poliomyelitis as a word of warning and of helpful guidance to parents who are thereby enabled to recognize early signs of the disorder. Methods of treatment are described and muscle training advocated.

### American Institute of Baking Properly Housed

THE American Institute of Baking, organized in 1919 for the purpose of placing the baking industry on a scientific basis, made a report of achievement at the Twenty-fourth Annual Convention of the Baking Industries held in Chicago September 20-22, 1921, which shows the immediate advantage both to the trade and to the public served in this provision of technical facilities for research. To the work of investigating the "chemical, physical, and biological problems which underlie the art and science of bread making" a service is being built up for consultation, advice, and critical examination on chemical, technical, and engineering subjects. On the nutritional side the study involves the precise analysis of physiochemical properties of flours and their baking qualities, examination of all shortening materials, of yeast food, and of milk products. The purely chemical work is supplemented on the bakers' side by the problems of engineering, building construction, power, heating, ventilation, wrapping, etc.

It is expected that the work of the Institute will be greatly facilitated by being housed in its permanent and adequately equipped laboratory home in Chicago. The property acquired consists of a three-story and basement building with ample room for expansion to meet the needs of the Institute for many years to come.

The Board of Governors has as its chairman, George S. Ward, of New York. Dr. H. E. Barnard is resident director of the Institute. The Institute will move from Minneapolis to its new home on or before January 1, 1922.



These tuberculous children are being treated by heliotherapy at the Franklin County Tuberculosis Sanatorium

# Health and the League of Nations

By C.-E. A. WINSLOW, DR. P.H., PROFESSOR OF PUBLIC HEALTH, YALE SCHOOL OF MEDICINE, LATE DIRECTOR OF THE DEPARTMENT OF HEALTH, LEAGUE OF RED CROSS SOCIETIES, GENEVA, SWITZERLAND

WHEN the Covenant of the League of Nations was first drafted it was realized that one of the many important tasks of the new machinery of international cooperation to be created was the promotion of the cause of public health. The need for an effective agency in this field to assist in the standardization of vital statistics, in the collection and dissemination of information in regard to the prevalence of epidemic disease, in the development of port sanitation, in the negotiation of international sanitary agreements and in dealing with public health emergencies of international importance was obviously an urgent one. The *Office International d'Hygiène Publique* in Paris, operating under the Convention of Rome drawn up in 1907, was well equipped, from a statutory standpoint, to fulfill many of these functions, but certain important nations are not members of the *Office* and the financial resources of the organization are wholly inadequate for the effective exercise of any of them. The Covenant therefore constructed its new international health organization upon the foundation of the existing *Office*, which was to serve as the General Committee of the new organization and to appoint six of the thirteen members of the standing Health Committee of the League. The advantages of the plan proposed were so obvious that it was approved by all public health workers without reserve and was to have been put into execution last June.

The plan for formal cooperation proposed in the Covenant required certain minor modifications in the Convention of Rome; and the United States, in pursuance of the unfortunate policy of blocking the work of the League of Nations in force at that time, refused (as one of the signatories of the Convention of Rome) to permit these modifications to be made. For a time it seemed as if the whole ideal of an effective, international health organization must be abandoned. Technicalities have, however, happily proved powerless to prevent an understanding, demanded by the common sense and mutual good feeling of all the forces vitally concerned. On the initiative of a preliminary conference of certain members of the proposed new Health Com-

*The matters which have commanded the attention of the health agencies of the League of Nations are proof positive of the necessity for international health organization. The concrete results of their deliberation are the earnest of the permanent value of the service.*

*Only when the scientific attitude is universally assumed will our neighbors cease to be a health menace. Only when all facts are in will disease control become feasible. An international clearing house of health knowledge would make effectual the emergent health functions of international health machinery and develop and standardize public health information.*

mittee of the League, held in Paris on May 5th, the Council of the League appointed as permanent health secretary, Dr. Rajchman, the brilliant chief of the Polish Health Services, and named a Provisional Health Committee, of members who were to serve in their individual professional capacity, but who were at the same time so selected as to include all the factors to have been represented on the Committee projected in the Covenant.

## Provisional Health Committee

The actual membership was as follows:

Prof. Leon Bernard, Professor of Hygiene, University of Paris.

Dr. G. S. Buchanan, Senior Medical Officer, British Ministry of Health, London.

Prof. Albert Calmette, Institut Pasteur, Paris.

Dr. Carozzi, Medical Director, International Labor Bureau.

Dr. Carriere, Director General, Swiss Public Health Service.

Sir H. Charles, President of the Medical Board for India.

Dr. Chodzko, Minister of Health, Poland.

Dr. Lutrario, Director General, Italian Public Health Service.

Dr. T. H. Madsen, Director of the State Institute of Serotherapy, Copenhagen.

Dr. Miyajama, Mitasato Institute for Infectious Diseases, Tokio.

Dr. Pulido, President of the Royal Council of Public Health, Spain.

Monsieur O. Velghe, Director General of the Belgian Public Health Service.

Prof. C.-E. A. Winslow, Medical Director, League of Red Cross Societies.

At its first meeting in Geneva, August 25-29, Dr. Madsen was chosen chairman of the Committee and Dr. Buchanan, vice-chairman.

The first question to be decided by the Committee was of course its relation to the *Office International* at Paris. It was clear, on the one hand, that the League of Nations must have its own health organization to advise in regard to the numerous health problems which come before it and that this organization, with modest but adequate funds and machinery for rapid action, would fill a pressing need for international service. On the other hand, it was essential to avoid conflict or duplication and to obtain the invaluable counsel of the large and democratically representative group of health administrators which constitutes the *Office*. Nine of the thirteen members of the new Health Committee of the League were also members (and among the most influential members) of the Committee of the *Office* and the spirit of mutual good will manifested by the representatives of ten nations gathered about the green table in the Palais des Nations at Geneva was nothing less than inspiring. Without a single echo of selfish interest it was agreed that cooperation must be brought about and effective methods devised for a relation between the *Office* and the League along the general lines laid down in the Covenant, but to be effected by voluntary agreement without the formal statutory changes which the attitude of Washington had made impossible.

## The New Organization

In the words of the resolutions finally adopted at Geneva:

According to the Resolution of December 10, 1920, the Permanent Committee of the *Office International d'Hygiène Publique* at Paris, which includes the representatives of some thirty-nine countries—in most instances important administrative officers in the Health Departments of these countries—would, with certain additions, have become the General Committee of the Health Organization of the League. We consider that no health organization for public health purposes can be satisfactory to the League, which is not based on consultation with such a body as this. International measures for the

amelioration of the public health require both the collective deliberation of the responsible public health experts in the different countries concerned, and the direct participation of such experts, to the greatest possible extent, in any international work which affects the administration of public health in their respective countries.

Accordingly, the Committee has considered whether it is possible, without placing the *Office International d'Hygiene Publique* under the direction of the League, for the League to avail itself of the services of that office under its present constitution as a consultative body essential to the work which the Health Committee has in view and to the health duties of the League under the Covenant. They are happy to find that no obstacles exist. The Committee of the *Office International d'Hygiene Publique* is authorized, under the Convention of Rome, 1907, to undertake the consideration of any questions of health of international importance, and has already on several occasions stated its willingness to lend its assistance to the League of Nations and to cooperate in the consideration of any health questions which the League may care to submit. This declaration was last formally made by the President of the Committee of the *Office International* to the Secretary General of the League of Nations in a letter dated April 27th, 1921.

The new organization therefore includes (1) A health Secretariat within the League of Nations (including Dr. Rajchman and his staff). (2) The Health Committee of the League which will serve as an executive body and will be qualified to deal with all matters requiring quick solution. (3) The permanent Committee of the *Office International d'Hygiene Publique*, outside the League, but serving by mutual consent as the deliberative body to which important questions may be referred for advice and counsel.

In regard to the constitution of the Secretariat it was decided at Geneva that the first step to be taken was the development of machinery for the prompt collection and dissemination of intelligence in regard to the prevalence of epidemic diseases of international importance and that the establishment in the Secretariat of a Service of Epidemic Intelligence and Sanitary Statistics should be undertaken at once. The division of Vital Statistics of the League of Red Cross Societies, under the direction of Mr. Knud Stouman, has been for two years working along somewhat these lines but it has been long felt that the League of Nations rather than the League of Red Cross Societies was the proper body to undertake work of this kind. Mr. Stouman and his staff have therefore been transferred

to the League of Nations and attached to Dr. Rajchman's secretariat to perform the service indicated above.

A second urgent matter which came before the Committee was the problem of epidemic disease in Eastern Europe. For nearly a year the League of Nations has had a special Epidemic Commission—under the direction of Dr. Norman White—carrying on a most important work in the control of typhus in Poland and now that the Health Committee of the League has been organized the Typhus Commission is to be officially connected with it. The need for famine relief in Russia has at last opened that country to missions from Western Europe but nothing definite is as yet known in regard to the actual prevalence of plague and cholera in that unhappy country. It was therefore decided to send a medical mission to obtain first hand information; and Dr. White and Dr. Rajchman left for Moscow shortly after the August meeting.

### Problems Are Diverse

Finally, to illustrate the diversity of the problems which the Health Committee must meet, mention should be made of a request from the Advisory Committee of the League on Traffic in Opium for an estimate of the average requirement of opium and related drugs for medicinal and other legitimate purposes as a basis for its work on the restriction of the production and interchange of such drugs. While recognizing the great difficulties involved in the task, the

Health Committee undertook a preliminary study in certain selected countries through a special subcommittee appointed for the purpose.

The potential importance of the new international health machinery created at Geneva can scarcely be exaggerated and the good wishes of all American public health experts will be with Dr. Rajchman in his difficult task. He assumes office on November first, the work remaining meanwhile in the hands of Dr. Steegeman of the British Ministry of Health who has for eight months been at the *Palais des Nations* as provisional Health Secretary pending the permanent organization now at last completed. To Dr. Steegeman and Dr. Buchanan, to Prof. Bernard, Dr. Madsen, Dr. Lutrario and M. Velghe and, above all, to Dame Rachel Crowley, with whose secretariat the temporary health work has heretofore been affiliated, belongs the lion's share of the credit for the happy consummation at last attained.

### Red Cross in Porto Rico

The Porto Rico Chapter of the Junior Red Cross has established the first fresh air camp on the island. A recent fire in the city of San Juan made many of the families homeless. The Welfare Bureau of the American Red Cross found that large numbers of children among these families were in need of fresh air. This was brought to the attention of the Juniors who voted to send the children to the mountains. One hundred children will be cared for by three teachers during their vacation.

## Campaign for Cancer Control

WHATEVER the message, whether scientific or secular, whether vital or of indifferent value, it takes hold largely in the degree that its publicity is well planned. It is chiefly on this account that the efforts of the American Society for the Control of Cancer is of such importance as a preventive medicine campaign.

The important laboratory studies of cancer in recent years have developed a mass of facts, and better records and general surveys have brought together an immense amount of valuable data that are at last being organized and properly presented to the public. During the intensive campaign conducted all over the United States and Canada from October 30 to November 5, valuable help was extended to lo-

cal organizations by means of literature, programs planned, and authoritative speakers furnished by the Society. Impetus was given to the whole subject of cancer control, especially through the cooperation consequent to the enlightened public interest growing out of their broadened information. It is significant, states the Society, that the death rate from cancer has been arrested. Since 1916 it has remained practically stationary, with only minor fluctuations. This is the most encouraging thing which has happened since the Society was organized in 1913, and leads them to believe that united effort by all cooperating agencies will not only prevent a further increase in this rate, but will effect a continuous decrease.

# Drug Addiction as an International Problem

By JACOB A. GOLDBERG, A.M., PH.D., DIRECTOR, JEWISH BUREAU FOR HEALTH INFORMATION AND SERVICE,  
NEW YORK CITY

A FEW months ago there appeared in the pages of one of the literary journals an article from the pen of a physician of high standing in his particular branch of the medical profession. This article, entitled "The Drug Habit in the United States," took occasion to criticize what was believed to be the exaggerated statements regarding the extent of drug addiction in this country.

The author of the article in question stated that at the draft boards, the total number of addicts discovered was 1,000, while 2,120 were found by neuropsychiatric officers at the camps and recruit depots—3,120 in all, out of approximately 3,500,000 men examined. Furthermore, assuming that ten million men would have been examined, other things being equal, there would have been about 9,360 male drug addicts, which would have represented more than the bulk of the male drug addicts in the country. It is the opinion of a number of authorities that the number of women addicts in the country is in all probability far below that of the number of men.

It is in order to question the above figures that the following facts are presented. Under the Tennessee Anti-Narcotic Law in 1913, Lucius P. Brown, then State Food and Drug Commissioner, found that within a year there were registered under the provisions of the Act 2,370 persons. The state of Tennessee contains slightly more than 2 per cent of the total population of the United States, and on the supposition that the same ratio of addicts held good throughout the country there would have been a total of more than 118,000 drug habitués in that year. Let us consider more recent figures of another kind. The *Monthly Summary of Foreign Commerce* of the United States, December, 1920, states that in the year 1920 there were 1,462 importers, manufacturers, and compounders of narcotics; 4,679 wholesale dealers; 57,793 retail dealers; and 235,330 practitioners licensed to dispense opium, morphin, cocain, etc. Furthermore, under the provisions of the Harrison Law there were issued during that year no less than 2,163,200 opium order blanks; also, during the same year there were no less than 3,177 convictions for violations of the

*Preliminary study now under way in certain selected countries is being directed by sub-committees of the Advisory Committee of the League of Nations on Traffic in Opium with the object of arriving at a satisfactory estimate of what may reasonably be regarded as the average requirement of opium and related drugs for medicinal and other legitimate purposes. Only in this way can be effected the equitable restriction of the production and interchange of such drugs. The question of drug addiction is a social medical problem, national in scope and international in its ultimate bearings.*

Harrison Law, for other than delinquent payments of the special tax and presumably for the illicit sale and distribution of narcotics.

Several years ago a committee of the American Pharmaceutical Association estimated that there were approximately two hundred thousand drug addicts in the country, these figures being based upon a consideration of the amount of narcotics definitely known to have been consumed. This Committee further estimated that the amount of narcotics actually needed for legitimate medicinal purposes in any given year did not exceed sixty thousand ounces.

In the year 1909 the amount of crude opium legally imported into the United States was 465,776 pounds. In 1919 the amount was 730,272 pounds, whereas in 1920, for some reason, the importations fell to 211,277 pounds. Since one pound of crude opium yields an ounce or more of the refined product, morphin, it is apparent that the amount of morphin consumed is far beyond the necessary and legitimate needs of the country. The figures presented consider only opium and its derivatives; cocain and its derivatives contribute approximately a sixth of the number of doses as does opium and its derivatives.

It has been found that the average consumption per day of morphin addicts is about 8.5 grains, or approximately six and a half ounces per

year. Assuming that the great bulk of the ten thousand drug addicts mentioned in the article criticised were morphin addicts, they would consume about 65,000 ounces of morphin a year. In view of this figure, what happened to 675,000 ounces of morphin in 1919 and to approximately 150,000 ounces in 1920? By adding to this the large amount of cocain and its derivatives definitely known to be consumed by addicts, the total is even more impressive. A recent Federal report stated that the amount of narcotics annually smuggled into the country was at least equivalent to the amount legally declared. Granted that this estimate is excessive, there is an additional large quantity of narcotics still unaccounted for.

In view of all the facts presented above, there can be but one of two explanations. The figures arrived at in the article alluded to must be very far from the actual number of addicts in the country, or the amount of narcotics consumed through the agency of patent medicines is very large. In either case, the result is the same. The author of this paper cannot help but believe that, after due allowance has been made for the amount that enters into patent medicines, and the quantity legitimately used, there is still a very large quantity which is put to but one use, and that is, consumption by so-called drug addicts.

A correct understanding and knowledge of the extent of narcotic drug addiction in the United States at the present time is of much importance. Under the organization of the League of Nations there is an Advisory Commission on Opium Traffic. Sooner or later the United States will enter the League. If the facts as presented by the article in question are correct, then there is no real problem of drug addiction in this country, and future action regarding this social ill in the United States requires no official action other than that already taken. However, by accepting the other group of figures, we are led to a realization of a definite social problem that requires active American representation on a new international commission, just as we were represented in the Shanghai and Hague meetings in former years.



# National Red Cross Convention

BY FRANCIS J. CARMODY, AMERICAN RED CROSS, WASHINGTON, D. C.

**H**OW the efficiency of the American Red Cross in its various fields of service may be increased and its scope enlarged was the general theme of discussion at the National Red Cross Convention in Columbus, O., just concluded. The Convention, bringing together representatives from the National Headquarters in Washington and Red Cross Chapters from Maine to California as well as lay speakers of national and international prominence, offered unusual opportunity for an interchange of views and experiences in the practical application of the manifold phases of Red Cross service in peace time.

While it is yet early to state definitely what will be the practical results of this first National Convention, it can be said with definiteness that it has served, as no other Red Cross gathering in the past has served, to bring with a new and greater emphasis a strengthening of the spirit of service that is the very fabric of the Red Cross.

## A Statement of Purpose

Dr. Livingston Farrand, retiring Chairman of the Central Committee of the Red Cross, who has accepted the presidency of Cornell University, voiced the purpose of the Convention in his address on the opening night, Tuesday, October 4, when he said:

The purpose of the Red Cross, the purpose of this new Red Cross, is to seize that spirit of service which was brought out in such untold measure during the war—is to seize that and preserve it for the welfare of our American democracy to whatever extent possible. That is precisely the reason for this convention, for this gathering of delegates from every part of the United States, actuated, we believe, by the soundest of motives, simply by the desire to give service, to perpetuate something of that spirit of idealism that came out through the war, and to prevent the reaction that followed the war from swamping our American people.

The Convention was divided into two sections, mass meetings given over to the discussion of the broad general policies of the American Red Cross by nationally prominent speakers, and sectional conferences in which the Chapter delegates were gathered for a discussion of the technical phases of the individual services of the Red Cross.

Of the mass meetings in the Coliseum, there were five, including the

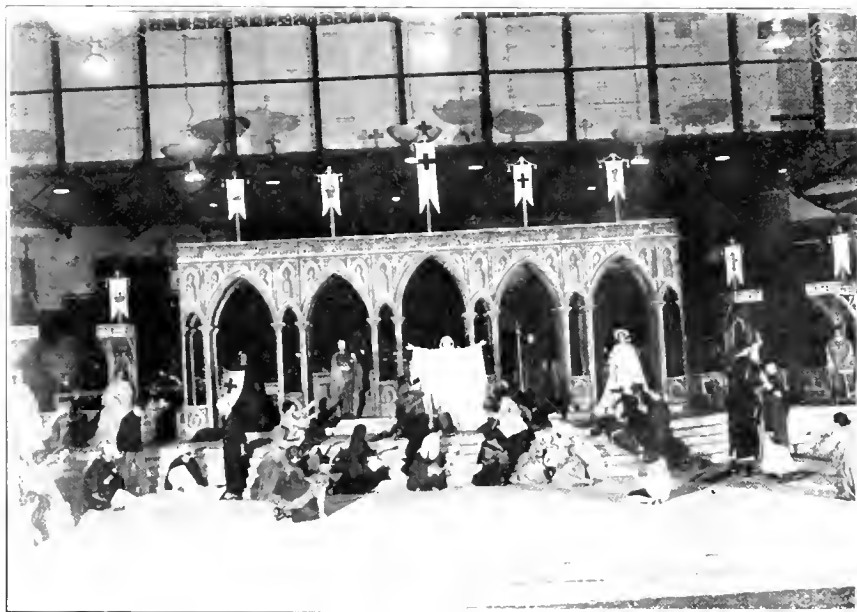


John Barton Payne, the newly appointed chairman of the central committee of the American Red Cross, has a long and honorable record in public service, and brings to his new office well proved ability as an executive and broad experience in welfare and recreational work.

opening session. The meeting devoted to a discussion of the Junior Red Cross, on Wednesday afternoon, presented to the delegates such notable educators as Henry Noble McCracken, president of Vassar College; Miss Charl Williams, president of the National Education Association; Dr. John H. Finley, and others.

"Veterans' Night," Wednesday, given the most prominent place on the program, attracted the most enthusiastic gathering of the week. That Red Cross service for the disabled man must be continued with ever increasing effectiveness and that its efforts in this field were greatly helpful and gratefully received by the Government and veterans alike was brought out by speakers representing the War and Navy Departments and Marine Corps, American Legion, and Veterans of Foreign Wars.

Ten minute speeches on "America's Obligation to Her Service Men and Women," at this session were delivered by Maj. Gen. John A. Lejuene, Commandant, U. S. M. C.; Dr. Thomas E. Green, American Red Cross; Capt. Robert G. Woodside, Commander-in-Chief of the Veterans of Foreign Wars; Rev. Francis P. Duffy, chaplain of the 165th Regiment; Rear Admiral Robert E. Coontz, United States Navy; W. Frank Persons, vice-chairman, American Red Cross; John G. Emery, National Commander of the American Legion; and J. Mayhew Wainwright, Assistant Secretary of War. A letter was read from General John J. Pershing, who had intended to address the meeting but who was unable to do so by reason of his trip to Europe, in which he extolled the work of the Red Cross in behalf of the service man, was read.



Disaster Relief tableau of the "L'ageant of the Red Cross," produced by two thousand performers at the National Convention in Columbus. In it Humanity stands revealed as the typification of the spirit of the American Red Cross.



Central view of the exhibit hall at the National Convention of the American Red Cross, Columbus, O., October 4-8, 1921

Dr. William A. Evans, of Chicago, former president of the American Public Health Association, was a speaker at the Thursday morning mass meeting, which was given over to a general discussion of Red Cross services. Miss Annie W. Goodrich, assistant professor, Department of Nursing and Health, Teachers College, New York, and Miss Lillian D. Wald, president of the Henry Street Settlement, New York, were other speakers on the Thursday morning program who discussed the nursing and health features of the Red Cross.

"The Red Cross is peculiarly well circumstanced to assist in increasing human efficiency by promoting safety first and other accident prevention work," said Dr. Evans. "In the education of the people and by securing public interest which results in changing habits and customs, it has great possibilities. It can do much to aid in the fight against organic cardiac and arterial disease, organic renal disease and in the promotion of human efficiency."

### Public Health Nursing

Discussing the public health nursing activities of the Red Cross, Miss Wald pointed out that "this great new field of constructive service sustained from day to day, month to month, and year to year, calls for conviction and for principles of service, rather than for an emotional reaction sure to be ephemeral in its character when not rationalized into a conception of its importance."

Red Cross Public Health nurses are at work today in forty-eight States, Alaska, the Virgin Islands and Porto Rico. It is a record that may well give you pride; but what is perhaps even more valuable

is the fact that there are among you many who have been glad to promote the idea and support the conception of others because they promised progress for the world. You have been an influence in stimulating the public to know that the Public Health nurse is an agent of service.

Among the speakers at Thursday afternoon mass meeting, devoted to consideration of the foreign service of the American Red Cross, which today as it regards Europe in particular is devoted to health and medical work among children, were Miss Alice Fitzgerald, director of nursing, League of Red Cross Societies; Dr. James W. Robertson, Canadian Red Cross; Dr. C.-E. A. Winslow, Yale Medical School; Hong Nien Tong, of the Chinese Embassy; Charles R. Crane, former Minister to China; and Dr. Albert Ross Hill, vice-chairman of the American Red Cross.

Miss Fitzgerald recounted her efforts to establish a standardized Public Health Nursing system in the various countries which are members of the League of Red Cross Societies, citing as her greatest obstacles in this effort as the varying standards of nursing in other countries and the geographical distances involved. Dr. Robertson discussed the health work that has been undertaken by the Canadian Red Cross.

### The Ninth Crusade

"It is our hope and belief," said Dr. C.-E. A. Winslow, who was General Medical Director of the League of Red Cross Societies, "that the Red Cross Societies of all the nations will shortly be enlisted in what has been called the ninth crusade, the greatest crusade in the history of the world, a crusade which will make the twentieth century memorable as the century in which the ravages of preventable disease were at last checked and controlled through the organized efforts of all the peoples of the earth."

Dr. Hill outlined the work of the Red Cross in Europe today, of which he is director. The make-up of the child health units which the Red Cross is putting into the field, he described in detail.

The last of the mass meetings was turned to the subject of the "Red Cross Roll Call" and confidence that the American people would generously support the program of service to which the American Red Cross is dedicated was generally expressed by the speakers.

The sectional conference, embracing such subjects as "Home Hygiene



Red Cross Home Service Group, flags of the nations composing the League of Red Cross Societies, and part of the throng that watched the "Pageant of the Red Cross"

and Care of the Sick," "Nutrition Service," "Health Service," "Public Health Nursing," "Health Service and First Aid" and "Service for Ex-Service Men" aroused great interest among the delegates, for it was in these meetings that they were given great opportunity for an interchange of experiences and views relative to the best methods of applying the service of the Red Cross in their own

communities.

The Convention was brought to a close by a mammoth "Pageant of the Red Cross," in which more than three thousand persons, including a chorus of one thousand, took part. This Pageant, visually reviewing the history of the Red Cross movements, was one that will long be remembered by the thousands privileged to witness it.

of age brought by their mothers for examination; the establishment of free medical dispensaries for expectant mothers; the diffusion of knowledge relating to infant health and maternal nursing, and the supervision of boarded-out children under seven years of age.

The cost of child welfare work will be borne one-half by the state, one-fourth by the province, and one-fourth by the municipality. Provincial and municipal boards are appointed by the national board, and advisory committees are provided for.

## Child Welfare in Belgium

DR. SAND gives a dramatic account of how intelligence, determination, and united effort have conspired to triumph over war, and pestilence and famine. Even during the years of occupation, when the Government had left the Belgian soil and the only central co-ordinating agency was the voluntary "*Comité National*," public health activities were started on a hitherto unknown scale, and for the first two years there was an actual decline in infant mortality, probably owing to the cessation of industrial work for women. The Children's Welfare League, which had begun to function to a limited extent before the war, developed in the midst of the most difficult circumstances until even the smallest village was reached.

In spite of these efforts the average child was, at the time of the armistice, one full year backward in normal development, the weight of the average Brussels schoolboy was three pounds below normal, and of the average schoolgirl seven pounds. The first step in the medical reconstruction of industry was the establishment of an independent labor medical service, which includes in its functions the protection of expectant and nursing working women and the care of the health of working children. The service immediately formulated a constructive program which enlisted the cooperation of all agencies concerned in the promotion of public health, including the health of working mothers and their children.

In the United States eighteen states provide for the physical examination of every child entering industry, but no state has provided for examinations of working children at regular intervals. Belgium has adopted the advanced program of a medical examination for every juvenile not later than a month after he has entered an industrial occupation, to be repeated once a year

until the child reaches eighteen, and oftener in case of disease.

Belgium has realized that health protection in the community must go hand in hand with health protection in industry, and Dr. Sand emphasizes the following points: General public health work, child welfare, housing, the restriction of alcohol consumption, and education and recreation, both for adults and children.

A national children's board has been established, which is maintained by public and private funds, and which supervises and supports child welfare organizations meeting certain conditions. The child welfare program includes the periodical free examination of children under 3 years

## Health Menace In School Buildings

The third "Know and help Your Schools" report of an inquiry directed by the National Committee for Chamber of Commerce cooperation with the Public Schools and the American City Bureau is based upon replies to questionnaires sent to 375 cities. It constitutes a philippic against old school buildings whose insanitary condition and fire hazards are a serious menace to a large percentage of American school children. Nearly 88 per cent of the total outlay is for sites and new building, and a mere 1.8 per cent for the alteration and equipment of old buildings. Conditions are particularly bad in the eastern cities.



Dr. Rene Sand, professor of Industrial Medicine, University of Brussels, in discussing "Industrial Medical Reconstruction in Belgium," brings out the fact that child life was penalized by the war, necessitating a reconstructive program.

# Rural Health Work by Means of Traveling Clinics

## The Fixed and Inaccessible Health Center Gives Way to Flexible Methods

By JOSEPH J. WEBER, M.A., MANAGING EDITOR, THE MODERN HOSPITAL, CHICAGO, ILLINOIS

**H**EALTH campaigners, particularly during the past five years, have not been content solely to provide buildings, equipment and medical and surgical skill to which the sick could resort for diagnosis and treatment. Rather, they are determined to carry the gospel of good health, and in some measure the means of attaining it, direct to the people, especially to the people in rural communities, where the ways of health are not always clearly understood and where modern facilities in equipment and skilled personnel for the diagnosis and treatment of

tation with motion pictures and slides; motor trucks, as the Cleveland Children's Year Special conducted by the Children's Year Committee of the Council of Defense of Cleveland, O., in 1918, which carried exhibits, gave motion picture shows, distributed literature and conducted a dispensary for child hygiene and welfare work; the Flying Squadron of Health which by exhibits, stereopticon slides and lectures carried propaganda throughout Wisconsin from 1911 to 1915 for tuberculosis prevention and cure for the Wisconsin Anti-Tuberculosis Association; trolley cars, as the Children's

Board of Health to carry an exhibit of animal parasites and a working field laboratory. Doubtless we shall soon witness the White Winged Squadron swooping down from the great spaces above to deliver its message of health to human beings diseased either in body or mind.

Any organization contemplating using this instrument for accomplishing some of its work, particularly for publicity purposes, will find not only the health publicity campaign, but also campaigns relating to a variety of other vital subjects, rather fully discussed in Mrs. Mary Swain Rout-



The Alameda County, California, touring car is under the direction of the Tuberculosis Association. It carries particularly the message of mouth hygiene and reaches industrial groups of foreigners who face unnecessary health hazards with unenlightened self-indifference.

disease are not always readily available. This campaign has been made possible by an interesting, and often picturesque, combination of modern educational materials and methods and modern transportation facilities. In this aggressive campaign, railway trains and parts of trains have been used, as, for example, the Sanitation and Health Train which the State Board of Florida conducted during 1916 and 1917 for the purpose of delivering lectures on health and sani-

Year Special conducted in 1918 by the Women's Committee of the Michigan Division of the Council of National Defense for exhibit, examination, lecture and demonstration purposes; horse drawn vehicles, such as the Health Exhibit Wagon conducted by the Vermont State Board of Health during 1913 and used for moving pictures and health exhibits; and, deviating slightly from these types, even the house-boat "Josephine," which was chartered by the California State

zahn's book, "Traveling Publicity Campaigns," published last year as one of the Survey and Exhibit series of the Russell Sage Foundation.

Traveling clinics usually have any one of three main purposes: (1) General or specific education. (2) Examination, diagnosis, and advisory service. (3) Definite treatment.

In some instances the traveling clinics are definitely equipped to function along two of these lines, in a few instances along all three. When

treatment is given, the clinic manifestly must function, also, along diagnostic and educational lines.

The traveling clinics whose purpose is primarily educational in character have resorted to practically every known modern educational expedient, including formal lectures, informal talks, personal advice, pamphlets, leaflets, exhibits, stereopticon views and motion pictures.

One of the most interesting of these clinics is the Child Welfare Special which began its career on the 11th of July, 1919, in Morgan County, Illinois. This clinic had its origin in the need of the rural child and the desire to give the country child the health and medical facilities heretofore accessible only to the city child, and to bring home by personal contact the lessons of child conservation. Although children were examined at this clinic (100 to 150 weekly in the counties first visited), these examinations were merely incidental. The main purpose of the clinic was to demonstrate by means of the examination of the children the need of periodical medical examination and the method of meeting this need, and to stimulate and aid in the organization of permanent child welfare work in the community. The examination of each child usually took about twenty minutes. During the examination the doctor would discuss each point with the attending parent, who at its conclusion was given copies of appropriate pamphlets published by the Children's Bureau, as well as a record of the child's physical condition and any written recommendations the doctor might have to make. If any defects were found, the parents were urged to have them attended to promptly by their family physician. As the clinic was not for clinical purposes, but wholly educational in character, sick children were rejected and referred either to a physician or to another clinic.

Another interesting experiment,

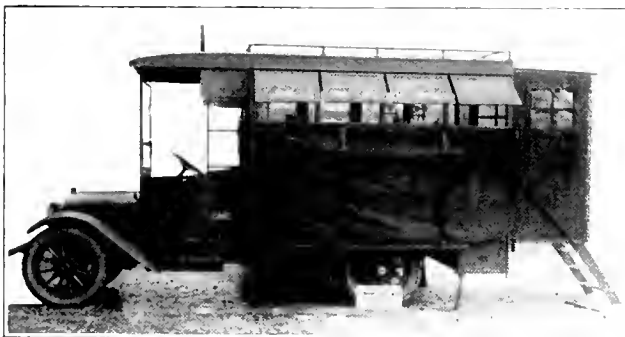
which illustrates the use of the motor truck for educational purposes along health lines is the Social Hygiene Field Car. This experiment is being carried out under the auspices of the American Social Hygiene Association, the American Red Cross, and the United States Public Health Service, and state and municipal boards of health. Its purpose is to carry on an educational campaign throughout rural districts through the use of moving pictures, stereomotorgraph slides, and other exhibits, regarding the ravages of venereal diseases and methods to combat them. Special women's and men's lecture films are used for the women's and men's meetings, respectively. In this campaign, school houses, churches, lodge rooms, and other available meeting places are used for the lectures.

An interesting modification of the motor truck whose purpose is primarily educational, is the Health on Wheels Truck of the New York State Department of Health, which is especially equipped to show health films at any remote locality, whether or not suitable halls or electric current are available. The body of this truck is so designed that it can be used as a temporary infant welfare station, as a miniature traveling laboratory, as a means of transporting x-ray and other apparatus for clinical work, and for other purposes.

For the purpose of weighing and measuring children and rendering advisory service, the Public Welfare Committee of Montreal conducts a traveling baby clinic. Ordinarily, the patients are limited to twenty-four months and under. This clinic, the first of its kind in Canada, was put into the field in the autumn of 1917, and since then close upon 1,000 children have been examined. This healthmobile completed a three weeks' itinerary through rural Quebec, examining both children and babies, and conducting a public health exhibit at the rural fairs.

An illustration of the second type of clinic, that is, the clinic whose primary purpose is diagnostic rather than educational, is the occasional tuberculosis clinic which was successfully initiated by the Tuberculosis Committee of the New York State Charities Aid Association. In the work of establishing tuberculosis dispensaries in the cities of New York state, the fact was brought out that a real need of facilities for the examination of the lung existed in small communities and rural districts where there was no dispensary and often not even a resident physician with special training and experience in the diagnosis of tuberculosis, especially in its early stages. To meet this need, traveling dispensaries were established which furnished expert medical examination to remote communities at irregular and rather long intervals. They served, however, not only to furnish this much needed diagnostic service (treatment was never rendered), but also to establish the need of tuberculosis hospitals where they did not already exist, to promote the increased use of existing hospitals, and to bring to light the conditions that promoted the spread of the disease, and thereby made possible effective methods of preventing it. These clinics have grown in number until now they are held under the auspices of the New York State Department of Health and the New York State Charities Aid Association jointly and separately, and under the auspices of local communities who have established them on their own initiative.

The Health Clinic of the Chicago Tuberculosis Institute, which serves a similar purpose, works on a definite schedule, covering about forty different towns each month at specified times. In mild weather the clinics are held in the healthmobile itself; in cold weather they are held at waiting places, usually a schoolhouse or church. An average of two hours is



The collapsible wall tents of this traveling clinic enable the prompt conversion of a mobile dental unit into an effectual working base in work carried on in Nassau County, N. Y.



This picture shows the Nassau County, New York, Dental Clinic ready for business.



spent at each place, during which period from ten to fifteen patients are seen.

A so-called diagnostic traveling clinic on a somewhat more ambitious scale, though not employing a motor truck as a means of transportation, is that recently inaugurated by the New York State Department of Health. This clinic is diversified in

secretary of the Junior Red Cross, at the Chapter House. When the dentist completes his stay at a given school the executive secretary of the chapter compiles from the day sheets and cash received a statement of the work done and the financial transactions, and sends it to the principal to be countersigned. The local dentists have been very cordial and have found

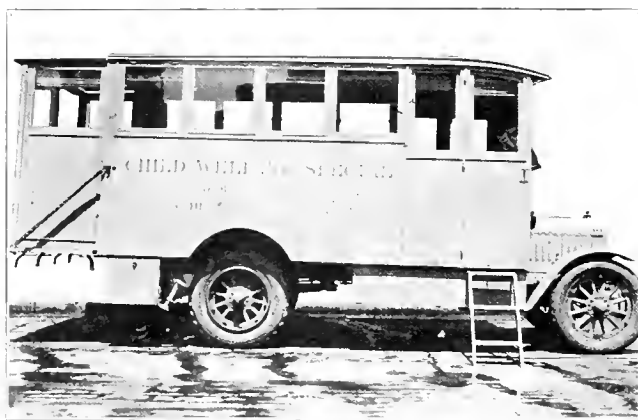
suitable buildings. The purpose of these clinics was not only to teach the laws of health and assist in the improvement of local health conditions, but also in remote places to make medical inspections, treat children and those afflicted with tuberculosis, and do dental work, particularly for children and emergency cases. The main effort was directed toward impressing on people the importance of having everyone, especially the children, frequently visited by the local physician, in order that disease and effects may be dealt with in their early incipency. Only persons who were unable to pay were treated at these clinics unless a special request was made by the family physician.

### Preparing for Effective Action

In most instances the motor clinic has to depend on advanced publicity and organization for real effectiveness. The kinds of advanced work needed depend, of course, upon the nature and scope of the campaign.

As indicative of the advance work required, let us consider the work done preliminary to the visit of the Child Welfare Special.

This clinic went only on the invitation of the State Board of Health, thereby insuring the cooperation of local agencies, such as the County Medical Society, the County Board of Education, the Board of Trade, women's clubs, and kindred organizations. These bodies assist in mapping



The "Child Welfare Special" is a great, gray automobile, used in educational extension work of the Children's Bureau.

character, is in session at given points for a week or more, devotes its attention to a variety of diseases, and is manned by skilled visiting specialists.

### The Treatment Motor Truck Clinic

The third type of clinic is that which, while doing diagnostic work, also goes further when necessary and gives treatment as well. Obviously, the traveling treatment clinic has marked limitations. It has, however, proved a success in the treatment of teeth and trachoma, as witness the Mobile Dental Units of Nassau County, New York, conducted under the auspices of the Junior Red Cross and the Traveling Trachoma Clinic conducted by the United States Public Health Service Bureau for the purpose of operating on cases of trachoma.

The clinic visits each school upon definite written application by its superintendent. A date is fixed and when the car arrives, the equipment is carried into the school house and the examinations begin. Defects are jotted down on a mouth chart, made out in duplicate. One of these charts is retained by the chapter and the other is sent by the child to his home.

Following the noon hour of the first day, signed consent cards and money begin to come back and the dentist starts his work. A record of the work done each day is made out on the "day sheet" which is mailed by each dentist each day to the executive

that the educational work of the clinic has filled their waiting rooms.

A somewhat more ambitious scheme was the two motor clinics put into the field by the Nova Scotia Provincial Branch of the Canadian Red Cross Society. They traveled throughout the Province of Nova Scotia during the months of July and August of



The Social Hygiene Field Car carries paraphernalia for outdoor exhibits or indoor clinics. In one week in North Carolina the message so carried reached 6,100 people, most of them inaccessible by any other means.

last year. Each clinic consisted of motor trucks, motor ambulances and touring cars. These vehicles conveyed four medical specialists, dentists, trained nurses, and Red Cross representatives, and the equipment of a ten or twelve bed hospital to be set up quickly in school houses or other

out the itinerary, arranging for meetings to explain the need for vigorous manhood and womanhood, as well as the purpose of the clinic. Committees were organized in the larger towns and chairmen and hostesses in the smaller settlements. These committees were responsible for



receiving the Special and its personnel, securing publicity, an appropriate stopping place for the clinic, the attendance of special groups and the foreign born, making appointments with families desiring conferences, providing motor service for speakers, and other activities. An advance agent usually preceded the arrival of the clinic by about two weeks, and assisted in the organization of these committees and their work. This agent carried with her material for the newspapers, printed instructions for the committees, copies of announcements for the ministers and posters advertising the Special. In each community she visited the local officers, editors, physicians, ministers, farm advisers, county demonstrators, representative citizens, business men, and social agencies to explain the purpose of the clinic.

### What of Results?

The specific results for each of the particular enterprises which have utilized the mobile units for the extension of their work have, on critical estimate, been highly favorable. The wake of the "Child Welfare Special" was marked by broad and lively interest in the whole subject of infant welfare. Tuberculosis work everywhere has received impetus from the traveling chest clinics. From Florida and from North Carolina, in particular, have come favorable reports of the social hygiene programs so initiated. This account is in no way to be construed as an attempt to evaluate the traveling clinic as an instrument for promoting the public health. At best, this is a difficult task, and the subject is important enough to warrant a separate paper. Whether its advantages outweigh its disadvantages when examined in relationship to particular purposes, must, until a greater volume of data is available, remain the responsibility of those in charge of particular projects.

### Women in Health Service

*Health News*, of the Public Health Service, states that in proportion to its size the personnel of the United States Public Health Service probably includes more highly trained and specialized women than any other branch of the Federal service. Among these are the surgeons, the reconstruction aides, most of whom have had college training or its equivalent, the nurses' corps, and the special body of nurses of possibly 165, who work in clinics and miscellaneous health activities, specializing in venereal disease treatment.

## Nativity and Infant Mortality

A STUDY made by P. R. Eastman in 1919 and published in the *Hospital Social Service Quarterly* attempts to bring out the racial factors involved in infant mortality. The deaths analyzed represent an infant mortality of 95.7 for each 1,000 registered births; a rate which taken in its entirety, bears, favorable comparison with not only the rest of the states of the Union, but also with most of the principal foreign nations as well.

The chief interesting feature is that the mortality of children born of native white mothers was only 87 per 1,000 births; whereas, that of the foreign-born mother's children was 108.4—the high rate among the foreign-born element being due principally to a group comprised of Russian, Poles, Austro-Hungarians, and Italians, whose collective rate was 109.5. The rate among the children of Austro-Hungarian mothers was 129.6, Poles (including those from Germany, Austria and Russian Poland) 122.7, British 71.7 and Irish 96.9.

The mortality under one year of age was much higher among babies of the foreign-born mothers than among those of native mothers, the death rate at the age of one week was considerably greater among the native (35.2) than among the foreign-born group (30.3), with the difference much enhanced for the Russian, etc., group (26.6). At the age of one month, the infant mortality of the native element was still highest, the rates being: Native 42.7; total foreign, 45.2; and the Russian, Poles, etc., 42.7; but at three months of age, there was very little variation between the rates of the three classes.

### Contrasts Offered

Of the total number of deaths which occurred at the age of one week, 50.4 per cent were stated as due to premature birth, 12.8 per cent to congenital malformations, 6.2 per cent to congenital debility, and 13.5 per cent to injuries at birth. During the age period from three months to one year, these causes accounted for only 7.2 per cent of the total deaths, the principal causes being given as the respiratory diseases, which resulted in 24.7 per cent, and the gastro-intestinal diseases resulting in 41.3.

It is therefore assumed that the principal causes of infant mortality incident to the native population are

those due to prenatal influences and to injuries at birth, while among the foreign element the diseases of the respiratory and gastro-intestinal tracts are the predominant causes.

The mortality from prematurity, etc., of infants of native mothers was 45.3, whereas, the rate among those of foreign-born was only 37.7, and that of the group comprising the Italians, Russians, etc., only 35.

Since the particular causes of infant mortality are materially influenced by national and racial traits and customs, more careful consideration of the character and habits of the populations is essential to any substantial progress in the improvement of child welfare in the future.

When starting a campaign to reduce the infant mortality of a community, a careful survey of the nativity, character, customs, and habits of the people should be the first consideration. Upon the result of this survey the whole future course of the campaign should be outlined. If it is learned that the community is of native stock, a course of instruction in prenatal care probably will be found most advisable; if the population is predominantly of foreign birth, then a campaign of education relating to the improvement of sanitation and to proper infant feeding will be likely to result most satisfactorily.

### English Research in Radio-therapeutics

The British Association of Radiology and Physiotherapy has placed the sum of twenty thousand dollars to the purpose of studying claims made by the new intensive x-ray treatment of cancer. The study may be extended to other subjects later held to be necessary to understand the cancer problem from any point of view that may arise. To initiate the study a scholar, on a salary for two years, will proceed to Erlangen, in Bavaria, where this treatment has been elaborated for a number of years. If his survey of the work is favorable, a complete outfit of the apparatus, such as is used at Erlangen, will be ordered forthwith and installed at the Manchester Royal Infirmary, where research will be undertaken along the lines indicated in his preliminary report. Collaboration will be undertaken with other specialists when the report of the scholar is received and work is about to commence at the Manchester Royal Infirmary.

# THE NATION'S HEALTH

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## A Contribution of Biometry to Philosophy

THERE are few more stimulating minds in the field of modern public health than that which directs the activities of the Department of Biometry and Vital Statistics in the School of Hygiene at Baltimore, and the group of contributions which has recently been distributed from Dr. Pearl's laboratory is rich in value and suggestiveness. Modern methods in handling hospital statistics,<sup>1</sup> a plea for the use of mechanical tabulating systems should be studied by all who are interested in the use of the hospital as a laboratory of scientific research. The second group of Dr. Pearl's influenza studies<sup>2</sup> furnishes an admirably thorough analysis of the factors correlated with the explosiveness and destructiveness of the influenza epidemic in 1918 in different cities. The more complete studies here reported remove any lingering doubts left by the author's previous paper and make it abundantly clear that neither age or sex, distribution of population, density of population, longitude, or rate of growth of the population bore any significant relation to either the explosiveness or the destructiveness of the disease. Latitude did show a suggestive correlation, the severity of the disease increasing as one passed southward. Both explosiveness and destructiveness on the other hand were definitely and strikingly correlated with the normal death rate from all causes and with the normal death rate from organic diseases of the

heart during preceding years, while explosiveness but not destructiveness was correlated with the normal death rate from pulmonary tuberculosis. This is a conclusion of the first importance and represents a substantial contribution to epidemiology. Another of Dr. Pearl's papers in which the public health worker will be particularly interested is the study of infant mortality<sup>3</sup> in which the author divides the causes of infant mortality into two groups, those which are now in the way of being directly controlled and those which are not practically controlled to any considerable extent and shows that while the latter group are reasonably consistent in their incidence in various cities the diseases of the controllable group exhibit the most significant and marked variation, forming, as the author says, "a real justification of the faith that is in the public health officer of vision."

In a remarkable series of essays on the biology of death<sup>4</sup> Dr. Pearl contributes one of the most suggestive contributions to biological philosophy that has appeared in recent years. By a thoughtful analysis of phenomena of life and death in protozoa and metazoa and particularly of the results obtained through the Harrison method of cell cultivation, he concludes that "it is the differentiation and specialization of function of the mutually dependent aggregate of the cells and tissues which constitutes the metazoan body which brings about death, and not any inherent or inevitable mortal process in the individual cells themselves." He then proceeds to discuss the statistical facts in regard to human mortality as evidenced in life tables from ancient Egypt and Rome to the present day and shows how the two factors of inherited constitution and environmental control through sanitation have operated throughout the ages. He next examines the causes of death, classified in the interesting way which he suggested in an earlier paper, according to the particular organ systems affected, and by a comparison of mortality tables in organisms as widely separated as man and the fruit fly, emphasizes the importance of the hereditary factors which govern the span of life. We may feel that certain of his criticisms of the claims for environmental sanitation go further than is justified but it is certainly well that public health workers should recognize clearly, and appreciate justly, the fundamental biological limitations within which their activities must operate. The conclusion that the time relations of the life span is immediately determined by the way potentially

1. Johns Hopkins Hospital Bulletin, xxxii, June, 1921.  
2. Public Health Reports, February 18, 1921.  
3. Transactions of the Eleventh Annual Meeting, American Child Hygiene Association, St. Louis, October 11-13, 1920.  
4. The Scientific Monthly, March to September, 1921.

mortal cells are put together in mutually dependent organ systems and that this mutual fitting together of the organs is determined by heredity seems thoroughly justified by the evidence presented; while the third general conclusion suggested by Dr. Pearl that environmental circumstances play their part in determining the duration of life by influencing the rate at which the vital patrimony is spent is a speculation of the greatest theoretical interest.

## Factors Accounting for the Increasing Life Span

DATA presented to the Section on Preventive Medicine and Industrial Diseases by Capt. W. E. Elliott, at the last meeting of the British Medical Association, show that in the decade 1871-1880 the expectation of life in Great Britain was 41.0 years. In the decade 1911-1920 it was 51.5. In other words, the average life span has increased eleven and a half years in half a century. This increase in the average life span is due to the years saved in the younger and more productive decades and may be accounted for by the reduction of typhoid and the water borne diseases, the elimination of typhus, and the more general improvement of the environment, particularly that of childhood. In spite of the fact that the population of Great Britain is 13,000,000 greater than it was in 1871, there are 50,000 less deaths per annum. In 1854 the death rate was 37.2 per one thousand; in 1920 it was 12.4 per thousand.

One is led to speculate on the future increased average span of life. Projected curves are tricky things and Hosea Bigelow's dictum "never prophesy unless you know" still holds, but if it were not for the human proclivity to guess, Wall Street and the race tracks would have to go out of business. It is scarcely to be expected that the rising curve will be able to hold its own during the decade of post-bellum readjustment; in fact, it is doubtful if it will pass its present mark until the period 1941-50. Bearing these facts in mind, and the difficulty in increasing the life expectancy in the upper age groups—the expectation for an Englishman of 70 is now 13 years, the same as in 1871—the following table has been prepared:

### EXPECTATION OF LIFE, GREAT BRITAIN

1871-1880 .....	41.0	1941-1950* .....	52.8
1881-1890 .....	43.7	1951-1960* .....	53.9
1891-1900 .....	44.1	1961-1970* .....	54.5
1901-1910 .....	43.9	1971-1980* .....	55.5
1911-1920 .....	51.5	1981-1990* .....	56.5
1921-1930* .....	50.4	1991-2000* .....	57.4
1931-1940* .....	51.4		

\*Estimated.

The increasing expectancy in the past is explained in part by the fact that in Great Britain the average number of deaths per annum from typhoid fever in the period 1871-1880 was 7,800, while in 1920 it was 537; in 1870 the scarlet fever deaths were about thirty thousand, in 1920 about one thousand; while in the past decade the annual number of deaths from pulmonary tuberculosis has fallen about six thousand. Among the communicable diseases, measles, whooping cough, influenza, poliomyelitis, and cerebrospinal meningitis still require the evolution of adequate control measures. The campaign against venereal diseases is bearing fruit and will undoubtedly do much to increase the average length of life in the middle age periods, as will also the movement for the control of cancer. Industrial medicine, mental hygiene, and the maternity and child welfare work will cause a continuous diminution in the mortality rates, while an increase of medical knowledge will do much to decrease the death rate from the so-called constitutional diseases.

Thus the achievements of the past raise bright hopes for the future. The health idea is becoming the universal custom of life—a custom based on knowledge which is becoming widely diffused throughout the general public.

## Needless Noise the Proper Concern of Health Officials

THE serious consideration of the deleterious effects of noise upon the public health is something which should have been undertaken long ago. Boiler makers' deafness is a recognized ailment, yet the thousand and one auditory and nervous disturbances of a minor character are rarely attributed to the well nigh continuous din and clatter of cities. The hubbub of the crowded street, the groaning of metal tires upon pavements, the snorts of trucks, the grinding of the elevated, the shouts of newsboys and hucksters, and all the other useless, yet none the less diabolical noises require the elaboration of a special repressive complex, an environmental adaptability which it is not always easy to achieve. The full bosomed contralto who rends the evening air, the razor-edge tenor which is scratched from a plate of denatured rubber, the mechanical piano, the fiend who practises on a saxophone, are as nerve racking and unnecessary as the early morning street car gongs, the bellowing locomotive whistle, and the automobile horn screeching for a best girl to hurry.

These sounds constitute an intrusion on connected thought. The mind is torn between the reception of auditory stimuli and concentration. There naturally follow resentment, irritation, and

the repression of the desire to slay the trombonist across the street who is blaring "The End of a Perfect Day," off key.

The real psychological explanation, though, lies in the knowledge of the utter uselessness of most of our city noises. Noise spells wasted power. It is a vestigial remnant of barbarism, made more effective by invention. What is the need for gongs in a world where everybody has a timepiece and most of our activities run on schedule like a railway? The men of the A. E. F. learned from the tiny whistles of the French locomotives how unnecessary is the brazen bellowing of the prairie whistle which tears across the silence of four miles of growing corn and starts the drowsy rustic to his milking. The muffler which can't be cut out has come to stay and, while of course nothing short of extermination will silence the cracked soprano, the raucous junk collector, and the cheerful idiot who plays one-finger piano solos, may blessings be upon the head of the health officer who will recognize and treat unnecessary and avoidable noise as a nuisance and a menace to the public health. And this is logical, for surely an offense to the ear is quite as bad as an offense to the eye or the nostril—perhaps it may be even more harmful—and surely the commission of the one should be as punishable as the other. The blessed contentment of the quiet of the open fields is not imaginary, it is the sigh of relief from nerves too taut from the stentorian voice of the city and, while the beatific silence may be occasionally broken by the tinny cacophony of a senile vehicle from Detroit, the sound-tortured soul is soon assuaged by Nature's silence.

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### Mutabilis Semper

IN ALL probability, about the time that Eve's granddaughters began going out to campfire dances with their cousins, their mothers used to foregather on the side line and decry the immodest tendency of modern dress, recalling those good old days when the truly modest virgin never appeared save in the largest fig leaves locally obtainable and no indecent huzzy enticed an innocent son of the house of Abel by the bobbing of her hair. And so it has continued even unto now.

The history of the world might be written round the perennial discussion of dress reform and the protest of the older generation against departures from established sartorial standards.

Yet dress reform, as such, has gotten nowhere. The ardent, goggle-eyed, short-haired woman in "sensible" clothes and square toed shoes never made a dent on that arch-producer of breast cancer, the old fashioned corset. Can anyone ever forget that rugged, ribbed monstrosity which

incased our modest grandmothers from manubrium to symphysis? Yet that steel-proof cuirass, guaranteed to withstand the most ursine embrace, has given way before the subtle hand of fashion and now the fireside tabbies are having conversational convulsions over the fact that at terpsichorean entertainments the modern girl either parks her stays or merges into the mural decorations.

Forsook, why not? The girl is going to indulge in the rhythmic exercises of the syncopated toddle and the muscles of the abdominal girdle are a great deal better off unhampered. If one compares the modern figure with the ant-like silhouette of the early Grover Cleveland period, one cannot but be impressed with the very genuine reform which has occurred and now that women are learning the joy of stayless exercise, there is a hope that corsets will become as extinct as bustles and the prevalence of enteroptosis correspondingly decreased.

A corsetless age would mean greater attention to diet—for adiposity would then mean social oblivion—and the stimulation of exercise to maintain the natural figure. These are accomplishments which direct dress reform never could have brought about any more than it could abolish the voluminous, heel-flapping, dust-collecting, step-impeding skirt. What a hue and cry there was when the hoop shirt, which occupied twenty-eight square feet of floor space, was abandoned by the graceless post-bellum vampires; but consider the shock which the knee skirt and rolled down stocking of mode would have produced. Peradventure yes!

If the woman who did her courting in seven ruffled underskirts and a set of ribbed nether garments which enveloped her from vertebra prominens to tendo achillis, not to speak of a considerable exterior array of uncompromising light-proof garments, was to take one glance at the up-to-the-minute girl whose raiment is a negative pressure above the xiphoid cartilage and below the patella, resuscitation would not occur. But which of the two will history say wore the more sensible dress? And are not these abbreviations hygienic, are they not a distinct advance toward a real improvement in dress?

"A woman's hair is her glory," but on the other hand in the days when a woman must have a hirsute decoration, natural or otherwise, it was a never ending bother and inconvenience, until the movies demonstrated how much better it looks bobbed. Anyone who is familiar with fermented scalps or with the fauna of the longhaired can understand what a blessed relief it must be to wash it under the shower without having to sit

on a sunshiny back porch all morning. Yet some strait-laced people say that the girl who goes without stays and hirsute ear-muffs must of necessity be a wanton and a menace to public morals. Pish and again tush! There is no more reason why bobbing the hair should make a girl a sink of depravity than that an A. E. F. haircut should make a boy a bank robber.

Yes, these are advances, advances toward health, toward sanity and, whether we rail or not, these advances will continue. Fashion, after all, is a dress reformer and since it reflects the sentiment of the age and this is the age of public health, it may be expected to fit its output more accurately to the sanitary model.

As far as our morals are concerned it may be pointed out that they are improving slightly in spite of never ending dress mutations and the assaults of the rouge pot and the powder puff and, after all, a woman's shoulder or knee are no more basically immoral than the end of her nose or the distal phalanx of her thumb.

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### The White Woman and the Tropics

THERE is a widespread belief, even among medical men, that there is something peculiar about the tropics which rapidly undermines the health of white women. This mysterious something is supposed to manifest itself particularly at the menstrual epoch; white women are supposed to retrograde morally and dispositionally under its malign influence; neurasthenia, hypochondriasis, and insanity are supposed to dog its trail.

All of this has been blamed on continuous high temperatures, white light, humidity, and the combination of all three. Strangely enough, the baleful manifestations of this tropical *ignis fatuus* are observed in humid and dry, cloudy and bright, sea level and mountain, hot and cool tropics—and curiously too, there are many white women who emigrate to the tropics from the temperate zone and live for years at the equator without displaying any of these weird symptoms. Taken by and large, white women of the same general habits have about the same degree of health no matter what their exact geographical position. To be sure, no sensible woman dresses, eats, and exercises in exactly the same way in Curacao and Chicago; but the same general habits would fit Managua quite as well as Memphis, because leaving out of question, the communicable diseases, personal health in the tropics is largely a question of cleanliness, diet, and exercise.

Cleanliness is absolutely necessary if one is to live in comfort to himself and his associates. This

is particularly true in the humid tropics because there the opportunities for the proliferation of skin bacteria and fungi are almost ideal and, in the absence of at least one daily soap and water bath, putrefactive and infectious skin processes are almost inevitable. Cleanliness of this sort is so imperative that in many places the whites, both male and female, have adopted axillary shaving as a routine practice. As a corollary to bodily cleanliness, the sterilization of clothing is a *sine qua non* if one is to avoid the various forms of ring worm and other parasitic fungi. The necessity for oral cleanliness is then about the same as in the temperate zone.

Diet is largely a matter of personal taste but as a rule it is wise to adopt the local dietary, bearing in mind the fact that carbohydrate poisoning is very common in the tropics. The candy box, the rich after dinner "dulce," the avoidance of roughage, all contribute to this. "Tin canitis" is largely the very human revolt against the same old tinned asparagus, and the inevitable canned peach.

Alcohol must be taken only in extreme moderation and in the absence of daily exercise, never. The tropical steady drinker who does not exercise, rapidly drifts into the class which has "missed too many boats" and breaks up quickly. There is a lure about all exotic places which is apt to translate itself into a lessening of self-restraint. As a matter of fact though, white women are just as sound mentally and morally in the tropics as anywhere else since unrestrained men and women do silly things all round the globe in exact proportion to the social, not the geographic, degree of latitude.

Exercise in the open air is even more needed in the tropics than in cooler climates. The daily siesta, the easy chair, and the avoidance of walking are deadly in warm countries and a great many of the so-called tropical neurasthenias are merely the results of physical laziness. One reason why women are so much more apt to break under the strain of tropical life is the fact that they take practically all their exercise at the bridge table and the afternoon tea. Conversely, tennis and golf, particularly the latter, are tremendous health adjuvants in warm countries. These same outdoor games do much to prevent those mental quirks which inevitably arise when a small isolated community of white women are made absolutely dependent on one another's society, while from the moral viewpoint, they stave off a world of entanglements. Of course, one dresses for comfort and sun protection, but, given half a chance, the white skin develops a pigmentary armor against white light which, while not approved by beauty parlors, is quite effective.

Golf is making the pink and white woman a thing of the tropical past and the seal brown freckle is now to the social fore "on the lap of the line." As a former beauty once said, "Well, I'm freckled like a guinea but thank God, I've my health."

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## American Public Health Association Meets

ONE way to make health interesting is to bring together from the four corners of the Country—as was done on the occasion of the Semi-centennial of the American Public Health Association in conference at this writing—representative health workers with illuminative accounts of the health work being carried on in their respective districts. Another is to make a popular dramatic appeal through the presentation of methods of health work, so fully exemplified in the health exhibit conducted during this conference for the purpose of stimulating workers and to raise the standards of health improving plans. Another is specific training for health apostles, and such opportunity as was afforded by the Health Institute to demonstrate in actual operation proved methods applicable to various phases of public health activities. Health leadership is ours if we choose to accept it and fit ourselves for the responsibility. The achievements of fifty years give us hope; failures and inadequacies of health service direct future enterprise. The inspirational benefit of the biggest and best public health meeting ever held by the American Public Health Association will soon be made effective throughout the Country by the more than five thousand delegates attending the conference.

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## The Complex Physiological Action of Sunlight

RECENT investigations in regard to the effect of actinic rays upon rickets furnish another instance of the tendency of science to vindicate the common instincts of mankind. A belief in the therapeutic and curative influence of sunlight has been stronger in popular than in scientific circles and the critical investigator of physiological problems has cherished a certain skepticism in regard to such an influence and has been inclined to attribute the beneficial effects of exposure to sunlight to accompanying influences of temperature and air movement of a more readily comprehensible nature. The work of Huldshinsky<sup>1</sup> and his associates in Germany seems however to have given convincing evidence that rickets can actually be cured by treatment, not

only with sunlight but with ultra-violet rays, the influence of other factors being apparently completely excluded in the latter case. Hess, who reported unfavorably on this treatment in an earlier paper,<sup>2</sup> has now repeated his work with favorable results,<sup>3</sup> and E. A. Park, at a meeting of the Society for Experimental Biology and Medicine on October 19, also reports definitely encouraging results. The physiological reactions involved remain exceedingly obscure. We have a disease which appears to be fundamentally due to an unbalanced relation of mineral salts in the organism, whose manifestations can be abolished on the one hand by the administration of cod liver oil and on the other hand by the effect of actinic rays upon the skin, a complex relationship which opens up large possibilities of speculation and research. The main facts however seem to be well established and the entire question of the effect of sunlight on physiological reactions must be reconsidered in the light of such findings.

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CONCRETE and convincing evidence of the value of health educational and medical service is afforded by the figures just available on the campaign of the Metropolitan Life Insurance Company, instituted in 1910, with the object of reducing the death rate among insured wage earners. From year to year the program was extended until it now reaches in excess of thirteen million men, women, and children of the wage working population. It is reported that in the group served in 1920 there occurred thirty-eight thousand fewer deaths than would have been the case if the 1911 mortality rate had obtained, and that the average life expectancy of white males at age ten was increased in the same period from 45.6 years to 49.5 years, which means a clear gain of nearly four years for every white male. There is no record, says the report, of a like increase in the life span, within so short a period, in the whole literature of public health work.

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CALIFORNIA physicians are somewhat progressive in their approval of the organization of physiotherapists, physiotherapy being defined by the California State Medical Society as a "group of physical therapeutic procedures to be prescribed by doctors of medicine and administered under the physician's direction by specially educated and trained technical assistants." The organization as promulgated and as now functioning is an effective unit of the medical profession of California.

1. *Ztschr. f. Orthop. Chir.*, lxxxix, 426.

2. *J. A. M. A.*, lxxiv, 217.

3. *J. A. M. A.*, lxxvii, 39, and *Amer. Jour. Dis. Children*, xxii, 186.



# HEALTH IN INDUSTRY

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## The Practitioner and the Industrial Physician\*

Cooperation Benefits Both Groups, at the Same  
Time Serving the Best Interests of the Patient

BY CHARLES EDWARD MONGAN, M.D., SOMERVILLE, MASS.

THE advent of the industrial physician whose particular work is the care of accidents and sickness in industrial organizations, the entrance of the state as a factor in the practice of medicine under the guise of the Workingmen's Compensation Law, and the insurance carriers who distribute the compensation for sickness and injury in industry have brought three new factors in recent years into the practice of medicine. To prevent waste of man power, to maintain production without serious interruption in the factory by eliminating waste of man power caused by sickness or injury, is the reason for the industrial physician. That the state should compel industry to bear in part the burden of sickness or injury by passing Workingmen's Compensation Laws is a sign of the interest of the state in the social welfare of employees. Heretofore, medicine and surgery had been the particular and peculiar functions of the practising surgeon and physician. His work was among individuals. To the individual he looked for his reward. To restore the individual to health was his sole object as physician. Industry or the state did not enter in any way in the functioning of the physician under the old regime.

Thus it happened by long custom and usage, the physician assumed that

*The Industrial Board is responsible for the administration of compensation laws, but their effectiveness largely hinges upon the physician, whose function is to cure, but who has not been trained to adjudicate cases. A perfectly functioning working agreement between the private practitioner, the industrial physician, and the medical representative of insurance interests is yet to be reached, but a new ethics will evolve out of precedents established and out of a better understanding of the intent of the law on the part of both the profession and the public.*

he had certain rights and duties in the community. These so-called community rights had been recognized and in a manner approved by the community. The private physician, after a course of study prescribed by a reputable medical school, had been given by these medical schools a degree which gave the possessor the authority to practise medicine. After a while the state began to take an interest in the practice of medicine and soon demanded that, in addition to the degree of M.D. conferred by a medical school, such person should also take an examination prescribed and held under the supervision of

examiners appointed by the state. After successfully passing such a state examination, he was entitled to practise medicine in Massachusetts. It was a right given to the medical man to practise his profession without restriction or without hindrance among the people of this particular commonwealth after he had satisfied the state authorities of his competency.

That was the custom until 1912 in Massachusetts, and during these years previous to 1912, by graduating from schools of medicine, by passing state board examinations, the physician acquired what is best called, perhaps, community rights. In 1912, the first Workingmen's Compensation Law was passed in Massachusetts and, unfortunately, in this law the individual was denied the right he had theretofore possessed always in Massachusetts to select his own doctor to treat sickness or to repair injury. The insurers under the Workmen's Compensation Law maintained that it was the right and the privilege of the insurers to employ medical aid and nursing care whenever that was necessary or wherever it came within the scope of the law.

Social legislation was something new to the average medical practitioner previous to 1912. In a vague and indefinite manner, he had heard something about so-called social legislation, but it was not until the passage of compensation laws that the

\*Read before the ninth annual meeting of the American Association of Industrial Physicians and Surgeons, Boston, Mass., June, 1921.

physician was forced out of his isolation and unwittingly made an active functioning power of our social fabric. Suddenly it appeared to him that our modern life, with all its complexities and perplexities, had become so interwoven with the practice of medicine that for the carrying out of its functions, whether those functions were in the great undertakings of peace or the formidable work of modern warfare, the medical man stood equal and pre-eminent with the captain of industry or the commanding general.

To evolve out of these new alignments of medical practice a working scheme wherein the rights of the workman, of the employer, and the physician will be safeguarded is the aim of men interested in the new conditions that have come into our profession. The industrial physician and surgeon has, therefore, a complicated problem to solve. The industrial physician has an economic status, and he has a medical status. On the economic side, he works temporarily for industry. On the medical side, he is a physician, and in caring for the sick or injured man he will be actuated by those influences which always actuated him in treating the sick—the will to give the best possible care which may most quickly restore the sick or injured man to health. It may be also said that this is the viewpoint of the manufacturer, but the manufacturer has looked upon the sick man not so much as a patient as an economic factor in production. This fact is well known and any experience in industrial medicine will prove that the manufacturer many times looks upon the sick and the injured in industry as an economic waste or loss of man power, and he looks also upon the voluntary absence from work almost in the same light as the involuntary absence from work, for both mean waste and loss and, in some highly organized industrial organizations, a disturbing element in production.

### Difficulties Ensurue

To take away from individual workmen the right to employ his own physician when injured or sick, no matter when or where, caused a great deal of resentment, not only on the part of the physician but also on the part of the workman. The physician considered that his community rights had been interfered with,—a right that custom had been made in Massachusetts almost equal to law. The workman became suspicious and looked with askance on any service given to

him by the industrial surgeon or by the surgeon or physician offered by the insurer and in this way the industrial representative. No matter how well equipped or how competent the physician representing industry might be, he did not seem to satisfy the injured workman. Here comes in that personal element which exists between the patient and the physician and which plays a vital part in the practice of medicine. That vague and indefinite condition which is expressed oftentimes by the phrase "the human element."

To provide the injured man with medical service without consulting him as part of the routine of industry carried with it the idea of cold materialistic efficiency, and the implication of an effort to trample the rights and privileges of the American citizen by compelling him to take something for which he had not asked. Perhaps there was a good deal of sentiment in this mental attitude. Perhaps this opposition was founded more on fancy than on fact. However, it existed, and straightway means were taken and the law in Massachusetts was changed so that now the employee injured in industry has the right of free choice of his physician. Perhaps you may ask, is this free choice always exercised? As far as I can ascertain, many workmen who are injured seldom exercise that right. Whether they know they have the privilege or not, I do not know, but as the workings of the laws of compensation have become more familiar, I think most injured persons are willing to accept competent medical care and treatment.

In the large industrial organizations which employ thousands of men, competent medical care and treatment is at hand and is humanely given and given quickly, and I think the advantage of adequate treatment quickly given near the scene of accident gives the injured person immeasurably better chances of recovery than if treatment were delayed.

What should be the relations between the physician in industry and the private practitioner? The private practitioner asks only that his so-called community rights be observed. He looks with suspicion on the full time medical man of industry. He thinks that the scope of the industrial physician is limited to those accidents and injuries which, on account of the gravity of their nature, should be treated perhaps by the man who first saw them and had given them the first treatment, rather than

that the industrial surgeon should try to enlarge his scope of practice by treating the families of the injured who under other circumstances would not have called him.

The private practitioner naturally selects a place where he thinks he can serve the community. His calling is not commercial. It is not a business, although one of the large public service companies in Massachusetts has been lately trying to prove to a state board that the physician is in business and not in a profession. But some of us cling to the old idea that the private practitioner still serves the community which he has selected for the scenes of his activities and, no matter what his reward and recompense may be, he still serves and does not ask for a return for his services on any commercial basis. Now how can these relations be adjusted so that both the industrial physician and the private practitioner may serve the sick and serve it in a spirit of cooperation?

### Effect a Compromise

In Massachusetts we have tried to solve this perplexing problem, which varies almost as much as human nature varies in individuals. It became very evident during the first years of the existence of the law that the board should have a medical advisor, and Dr. Francis D. Donoghue of Boston was selected as the man, and under his wise and discreet guidance the medical profession in its relations with industrial accidents has been most fairly treated. In Massachusetts there is what is called a Medical Advisory Committee, which has no legal status but acts as an advisory committee to the Industrial Accident Board. This Advisory Committee represents the two leading medical societies in the state. In their advisory capacity, they are called upon oftentimes to give of their knowledge and experience such advice as will enable the Industrial Accident Board to treat fairly the injured person and equally industry, as it is represented in the insurers.

Like all human agents, the Advisory Committee has not been able to satisfy all the physicians, all the injured, and all the insurance companies, but in a report to the profession which was issued June 2, 1921, is a résumé of some of the matters that the Advisory Committee has considered concerning workmen's compensation. Although this Advisory Committee has not a legal status, the Industrial Accident Board has always been ready to consider any advice it

may give. We think that the spirit that the Advisory Committee exhibited in this connection is most excellent. That the Industrial Accident Board is ready to accept, to listen, and in many cases to be led by the Advisory Committee, speaks well for the earnestness and broadness of the Board in trying to arrive at fair conclusions.

If I may pause for a moment to become personal, may I pay a personal tribute to the wisdom, the discretion, and the indefatigable work of the Medical Advisor of the Board, for, in addition to these qualities, he seemed to recognize in this matter what few public officials recognize, namely, the human element that enters into the discussion of these cases. In this report the Advisory Committee has not attempted to lay down any hard or fast rules.

As a member of the Medical Advisory Committee of the Industrial Accident Board, I feel justified in quoting at some length from the report that has just been made to the profession. This report is remarkable, not for what it has recommended, but for what it has not recommended. To the Industrial Accident Board concerning the relations of doctors to the insurers, it has not recommended any fee-table. It has not interfered in any way with any contracts that may exist between doctors and insurance companies in taking care of cases within the legal limited time. It has made no recommendations, suggested any rate of compensation, nor has it interfered with the contracts as to special cases made outside the limited time. No rule has been made that would interfere with any contract that is expressed or implied for the treatment of any private patient. In cases in which a special private physician afterwards is called to the injured, no ruling has been suggested by the Committee to follow the settlement on an industrial rate basis. It is only that the insurer is not expected to pay more than an industrial rate. In Massachusetts the industrial rate has come to mean a reasonable fee. A ruling recommended by the Board in January, 1914, and enacted into law in the same year, provides that unusual cases are to be cared for and proper charges paid by the insurance companies beyond the two weeks limit. This was intended to prevent the possible neglect of serious cases. Of course, there may arise some difference of opinion as to what constitutes an unusual case, but when a case is reported to the Industrial Ac-

cident Board within two weeks, a satisfactory arrangement is made.

Hospital fees have given rise to a great deal of discussion. As a rule the regular established fee that is charged to the ordinary patient has been adopted by the Industrial Accident Board. In some cases the fee given the hospital is lower than that paid to others for the same treatment in the same hospital. In some cases this may be a hardship, but in the general run of cases the hospital is satisfied with the amount given. Sometimes serious accidents call for private rooms, special nursing, and other changes which serious cases oftentimes demand, but if these changes do not include luxuries, and if the necessity of the case demands that extra nursing, extra medical care, and private rooms, these are generally allowed after consideration by the Industrial Accident Board.

### A Discussion of Fees

Fees to hospitals and physicians have been a subject which has given rise to quite a little discussion and a discussion which has been carried on with more or less bitter feeling. Although I myself have not fully made up my mind as to the disposition of this item, the majority of the Advisory Committee feel that if an industrial accident patient comes to the hospital and occupies a ward bed that he is entitled to the same treatment as his next neighbor in the hospital who is not an industrial accident case, and for the service rendered to both the attending physician should receive no fee. It has been contended that as a member of the community, the industrial accident patient has the same rights in a semi-public or public hospital as a patient who was not an industrial accident case. These so-called community rights could not be taken away from him on account of his being on compensation. It is contended also by some that the community rights do not apply to an industrial accident case brought to the hospital, because the state has made special compensation laws for that case, and these laws supercede or nullify, or wipe out any of the so-called community rights that the industrial accident patient may have had.

It is contended that the physician when he took his place on a hospital staff took it with the understanding that he would give free service to all patients in the public ward and that the physician thus working in the ward receives no actual fee, but, through his connection with the hos-

pital, attains some prominence in his community, skill in treating a large number of patients, and familiarity with the methods of practice, and that his return was a large private practice by which he could give to those who could afford it, the benefit of the skill and knowledge that he had acquired in the hospital and which he freely gave to the ward patients.

I am not prepared to state which side has the better of the argument, but I will say this: I think that the private physician treating industrial accident cases in the wards of the hospital theoretically at least should receive a fee. But, owing to the conditions which prevail in very large hospitals, and owing to the local conditions that prevail in a great many cities where there are large hospitals, it has been impossible to make a plan or ruling by which the physician should be paid and justice done to the hospital and to the insurance company, and to the community. Until such a plan has been evolved, the Committee feels that no physician's fee should be charged for industrial accident cases which come to the public hospital ward.

Specialists' fees, when specialists are called in on account of their standing and reputation in the medical community, and the nature of the case justifies their being called, have always been justly considered and paid, but no actual ruling to this effect exists.

These are some of the problems that have come under the consideration of the Advisory Committee. I think, as time goes on and physicians become more familiar with the law and insurers become more reasonable in their methods of procedure when dealing with the physicians and the insured, a working basis can be supplied which will be fair to the injured, the insurer, and the doctor. A great deal of friction has been caused and a great deal of unnecessary bother has been created oftentimes by the type of man that some insurance companies select as their representatives. Some of these agents of insurance companies use manners, to say the least, that would not be tolerated in ordinary polite society. As a rule the physician is an honest man and does not start out, as the actions of some of these agents would imply, to make all he can financially out of the case. I am fully aware of the amount of tact, diplomacy, and discretion that is necessary on the part of the insurance agent, but many times we are forced to the belief that the insurance agents possess none of

these qualities or characteristics. It may be because he has been brought up commercially. It may be that his superior is constantly insisting that things should be done as cheaply as possible and that the overhead must be kept down, but it strikes me that, if physicians could be employed in disputed cases to talk with the physician whose case is in dispute, all disputed cases could be settled more quickly and more amicably. I also feel that the financial outlay caused by the employment of physicians would be more than compensated by their results.

### Objectives in Common

To sum up the industrial medical man, the insurance doctor, and the private practitioner have one object in view—the restoration to health of the injured or sick person. It should be always kept in mind that the law for workmen's compensation was primarily passed for the purpose of aiding the injured man. It was not passed in the interest of the physicians. The physician is, of course, an incident in this matter. On the other hand, the law cannot be met with any degree of success unless it has the goodwill and the support of the

profession, and there is not any reason why that goodwill and support cannot be obtained. The law is not a doctor's compensation, it is a workman's compensation. The private practitioner feels that the industrial physician should, as far as possible, consistent with the safety of the patient, confine his work within the walls of the factory, for fear that the growth and development of the industrial physician will be only a matter of time when the industrial physician in some communities, at least, would control all the practice and in a small way we might develop a species of state medicine such as existed in Russia before the war, when all kinds of hospitals were connected with factories, even obstetric hospitals, and where the practice outside of state control practitioners was at a very low ebb. Visitors from the United States found some things in the state medicine of Russia to practise.

The education of the medical men in the matter of workingmen's compensation law is imperative. Before blaming in any way the Industrial Accident Board as they exist in this country, and before criticising suggestions that the Medical Advisory Com-

mittee may have given, it is well fully to consider all the factors in the case and also to study the law, and to study it thoroughly, and to bear in mind that boards and advisory committees are not responsible for the law, that the Industrial Accident Board is simply responsible for its administration.

By educating the public—I mean the medical public—I think it would be advisable to publish reports of cases that come before the Industrial Board for disposition. I think it would be well also to publish cases where there have been unusual injuries. I mean that the medical side of these cases should be published, the length of time that the patient was under medical care, and the cost. It has oftentimes been said that the responsibility of office and the assumption of responsibilities, whether they are private or public will oftentimes soften criticism and dampen the ardor of the reformer. Therefore, medical publicity in order to stimulate a deeper interest of the physician would do a great deal to help to make the compensation law what it was intended for—the alleviation of suffering and the restoration to health of the sick and injured in industry.

## Defects Affecting Fifteen Hundred Men\*

By B. FRANKLIN BUZBY, A.B., M.D., PHILADELPHIA, PA.

THE question of what to do with physical defectives in industry is an unsettled one and, while the number of examinations reported in this paper is comparatively small, the disposition of the partially unfit would be applicable to other plants, whether large or small.

The work reported was done at the plants of the Keystone Leather Company and the Joseph Campbell Company, both in Camden, N. J., so that the labor supply is the same in both cases. All the subjects examined were male and all received the same examination with the exception that in one-third, five hundred in number, urinalysis also was done. The type of men being practically the same at both places, even this small number in part at least, will afford an index as to the incidence of renal disorders in workmen.

A word about the completeness of the examination might be in place in

the beginning. All clothing, including shoes and stockings, was removed, and the men were examined alone in the examining room. Each examination consumed about twelve minutes and included a short history concerning previous and present occupation, age, marital condition, past illnesses, accidents or operations, venereal infections, and specifically, concerning convulsions or frequent fainting spells. Then a general inspection was made of the eyes, ears, nose, throat, teeth, body, extremities and arms. This was followed by measuring of height and weight and a testing of joint and muscle mobility and examination for hernia. There followed an examination of heart and lungs and the determination of blood pressure by auscultation. Abdominal examination was made by palpation and the testing of vision at ten feet. Then, following the passage of urine in the presence of the examiner, the employee was dismissed.

Women were examined also, but as the examination was necessarily less

complete, their records are not included in this report.

The age of the employees varied, as is true in all factories, and all nationalities are typically represented as they ordinarily apply for and receive work at all industrial establishments in a city. No re-examinations are included in this list, although many were made in the nature of checking up the physical condition of those whose defects required special placement.

As is well known to all industrial examiners, many of the defects exhibited are comparatively easy to remedy. The question comes up always, however, What shall be done with these employees? A year ago the spirit of cooperation in the rank and file of employees was unfavorably influenced either because of the independence of labor as a whole or of the usual "don't care" spirit of all human beings when things are going well. More recently it seems that at least the more intelligent of the workmen are willing to take suggestions

\*Read before the Association of Industrial Medicine, and the section of Industrial Medicine and Public Health, College of Physicians, Philadelphia, Pa., February 11, 1921.

as to means of attaining better health and thus be better able to meet the competition for employment which apparently is becoming widespread.

### Choice and Compulsion

But the general question is still open as to what means shall we employ to improve the health of the worker. Is it to be force, persuasion, or suggestion? With regard to force, medical ethics opposes saying to any man, "You must do thus and so to remain at work or to get a certain position," unless such a dictum is definitely a case of protection as appears under the discussion of hernia. At once the enmity of the workman is aroused by compulsion and, although he may, in the initial instance, do what he is forced to do, would he consult the physician at the plant in any subsequent emergency? And that is the crucial test of the industrial physician, for he must secure the confidence of the worker at the plant, making the men his friends, the same as in private practice. There is the tendency in industrial medical work entirely to overlook the side of the employee, and in the rôle of the patient, his needs are paramount.

Persuasion, too, is a wrong method; a doctor who has used up a half hour or so in convincing a man of his need to be operated on for enlarged and diseased tonsils, a hernia, or any other such condition, receives undue blame if anything goes wrong either during or after operation, such as hemorrhage in the tonsil operation or recurrence of the hernia. The whole story goes through a plant and loses the physician friends that he has previously made by hard, conscientious work.

The better method, as in private practice, is merely to tell the man the conditions found, enumerate the procedures that could be undertaken for relief, and then, in the light of the value he places upon his health and ability to work, let him select his own method of treatment. Should he decide to have operative correction, or whatever the doctor may consider the proper treatment, the doctor can then help the man in his selection of surgeon, or hospital, or appliance. Perhaps some will say this is passing up the responsibility, but the element of coercion enters into the man's mind when the physician paid by his employer says, "You should have this done."

There is an important psychological difference in these methods of procedure, and if the employee voluntarily chooses his own course when the va-

rious roads are pointed out to him, he has more self-respect and a better attitude toward his employer than if he were told to take the road to the right. Frequently when such things are explained to the workers, they desire to consult their family physicians, which, incidentally, it is our practice to advise all to do. Usually the family physician agrees with the doctor in the plant as to the contingencies and he takes the initiative as to what should be done. This advice, since the employee is paying for it, he does not resent.

To be sure, compulsion plays some part in such an ultimatum as this: "If you can see no better than that without glasses, your work will have to be changed," which in a skilled or semi-skilled worker means demotion to the plane of a common laborer, with accompanying decrease in income; but in such a case the man feels that he himself is deciding to have his eyes properly refracted, and he will shortly ask where to have the work done and will not take exception to such remarks, for ultimately he makes his own choice.

Another question arises: Is each employee to be apprised of any irremediable defect found and of which he doesn't know, such as a heart lesion, or high blood pressure, or tuberculosis? It was the rule in this series to tell every man his exact physical condition in addition to making accurate notes on it. This procedure is advisable, for how is the man to be made happy in a change of work unless he knows it is for his own benefit and is willing to cooperate?

### Applied to Old Employees

Again, in a general way, how shall we treat applicants for work as compared to the employees already at work when found to be defective? Every applicant for work rejected for disabilities exhibited should be told the cause of rejection, and in case a remediable defect was the causal condition he should be told the same thing as the man already at work, namely, how this defect could be corrected, and, if corrected, it is well always to be able to assure a man that he could then secure employment, if any were to be had, thus again giving him the choice of his own procedure. If the defect is not subject to remedy the man is told just why he is a menace.

On the other hand, in the case of the older employees with irremediable defects, one is able to do a world of good by transfer to suitable work and by giving advice as to what to do to

keep the condition from progressively getting worse. Some men, naturally, are found too ill to work, as in the case of decompensated heart lesions and tuberculosis. These should be told of the danger to themselves and to those with whom they work, and should be put into competent hands for help. In case of some employees whose length of service, loyalty and position in life have been considered, they should be taken care of in some way, such as a pension, by the company. In fact, such action is fast becoming a general practice, even though the fact is not widely advertised. At any rate, no employer should throw out an old employee without some sort of physical or financial benefit. As this may sound like advocating compulsory health insurance as agitated by various labor unions, let me state here that I am absolutely opposed to it as a remedy for existing ills.

The idea in physical examinations in new employees, however else it may be stated, is that the employer can keep the unfit out of his plant, but at the same time, by holding up or postponing employment of those with badly decayed teeth, markedly defective vision, bronchitis, contagious diseases of all kinds, including skin and venereal diseases, hernia, severe varices without support, pleurisy, etc., until these conditions are corrected, he also actually forces health on applicants for work. Thus, by having only physically fit men and women in a plant, he greatly increases the productivity of the employees, thus increasing the income of workers as well as himself, and so all are benefited.

In the long run this can result in no harm, provided the labor market is sufficient, as it is at present. While the applicants are compelled to better themselves physically should they wish to work in a particular plant, still if it is clearly stated at the time of physical examination that such conditions exist, and until such time as they are corrected the applicant cannot go to work, certainly he will do what he can without feeling any animosity toward the firm for rejecting him, especially if he gets the same answer at several plant employment offices. The several major defects merit a brief discussion.

### Defective Vision

In 21.4 per cent of the men examined the vision was 10/20 or less in one or both eyes. I have made an arbitrary ruling that no man with an uncorrected vision of less than

10 30 in a skilled worker and 10 40 in an unskilled worker should be given employment. In case of those already working in the plant the same rule applied, but in this case the man was told of his defect and that if he wanted to be able to compete with men able to see well in the same job he would have to have something done or else be transferred to some unskilled position paying less wages and but in which there was no danger connected. Again, even though the vision were 10 15, in the presence of symptoms of eye strain, or if errors in the man's work were attributable to defective vision, he was told of his needs and transferred to other work until such corrective measures were taken and then given his old job. If any of these defectives were discovered to be unable to pay an oculist's fee they were told of hospital clinics where such help could be had gratis, and all were warned against the optometrist.

Those blind in one eye or with one eye missing, making up 1 per cent of the total, were all rejected or gradually eliminated because of the possibility of the loss of sight in the remaining eye and subsequent total blindness.

### Diseased Teeth and Gums

At least 31.3 per cent showed two badly decayed teeth with or without pyorrhea alveolaris. In case of applicants the employment of those with six to eight or more black snags of roots with pus exuding from the sockets was postponed until the offending members were removed. I felt that in the average case far more than half the battle was won if the teeth were removed, for the man would get false teeth very quickly when he found he was unable to chew his food. With those in the plant it was very difficult to convince the average man that a tooth which was not aching could possibly be a source of trouble, but once the word had gone around that I was insistent upon clean mouths the number appearing for examination with raw, sore gums from recently extracted black roots grew rapidly. With the others I used suggestion as to the foulness of their mouths by making various revolting comparisons, and I got results, as seen by subsequent check-up examinations, at which time I found the mouths clean and the men grateful.

### Nose and Throat Conditions

Enlarged and diseased tonsils were found in 8 per cent of those examined, and only in those with a history

of repeated attacks of tonsillitis and quinsy or of some of the cardiac and arthritic complications was the removal of tonsils suggested. No rejections were made for this condition alone and only in case of an acute attack at the time of examination did we postpone the employment of any of the sufferers from diseased tonsils.

Deviated nasal septum was present in some degree in 16.3 per cent of the men. All were informed of the condition and told of the possible necessity of correction if repeated attacks of rhinitis occurred. It had no bearing whatever on employment.

Deafness was present in 0.7 per cent of cases. All were rejected in case of such applicants as could not, except with difficulty, hear the spoken voice. Those already in the plant were placed in safe positions if not already so favored, in order to preclude the possibility of these men not being able to hear danger signals.

Flat and phthisical chest, with abdominal breathing, occurred in 3 per cent of cases. If this existed without any other active disease in the chest both new and old employees were advised as to how it might be in part overcome by exercise, especially in the young. This particular type of man, however, was kept under observation and checked up from time to time regarding weight and general condition.

### Cardiac Conditions

Myocarditis was found in 0.8 per cent of cases. In this number are included arrhythmias without any dilatation of the heart, but not involvements of the type usually spoken of as juvenile or respiratory types. Unless the worker already in the plant held a rather easy position, effort was made to have him transferred in case he was symptomless, especially if the condition were accompanied by high blood pressure, as it usually was. Those with symptoms were usually referred to their family doctor or some suitable man for treatment. They were usually laid off until all symptoms disappeared and were taken back only if their records were worthy. All applicants with this condition were rejected.

Endocarditis, which classification includes valvular disease as shown by murmurs and enlargement of the heart, represented 2.3 per cent of those examined. Those already at work, if compensated and without any history of decompensation, were let alone unless the work was particularly laborious, in which case lighter work of some type was furnished.

If decompensated, they were laid off until such time as they were again fit, following treatment. When they were considered ready to return to work they were given an appropriate position should their previous services warrant it; if not, they were not taken on again. Applicants with aortic or pulmonary valvular disease or mitral stenosis were all rejected. In case of mitral regurgitation the work to be done, as well as the general condition of the patient, was considered, and usually such were put to work in a suitable position. In the case of skilled workers already in the plant it was a difficult matter to transfer these men because of the lessened income which must necessarily ensue. The men and foremen were both told of the conditions and things were left as they were.

### Incidence of Tuberculosis

Unquestioned tuberculosis represented 0.8 per cent of the series. These were all laid off, if at work, with advice as to where to go for help, either to a tuberculosis dispensary and eventually a sanitarium, or to the family doctor. All applicants with this condition, even if only suspected, were rejected. In case of suspects already in the plant, these were all given light outdoor work with hygienic and dietary advice, and frequently checked up as to weight and the physical findings in the chest, and if the disease progressed they also were laid off.

### Surgical Conditions

Unilateral hernia represented 5.1 per cent and bilateral 1.8 per cent of the total examined. There was only one case of femoral hernia, the rest representing the inguinal type. These figures bear no relation as to whether the protrusion was complete or incomplete. The New Jersey law absolves the employer from responsibility in case of the indirect type of hernia, but does not, of course, relieve him in case of an injury to the contents of an already existing sac. Therefore it was deemed advisable to give the sufferer the choice of the radical cure or a properly fitted truss in case of the old employees. Every applicant with hernia was rejected unless the man was especially skilled and his work not particularly arduous, in which case he was permitted to go to work provided he wore a satisfactory truss.

Hydrocele affected 0.6 per cent of the series. If the condition was pronounced, proper treatment was advised; if small and symptomless, it



was not interfered with in case of those already in the plant. In applicants a hydrocele larger than a goose egg was a cause for rejection unless the man was especially fitted for some important duty and the men available for the position few. When larger than a man's fist, all hydrocele cases were rejected.

Varicocele occurred in 5.3 per cent, but none were rejected because of this condition and all were advised to wear a suspensory for comfort. All were advised of the operative procedure possible if they were not relieved by a suspensory.

Gonorrhea and syphilis in the infectious stage were found in 0.7 per cent in case of the former and 0.4 per cent in the latter disease. In case of men already working the men were laid off with the promise of their jobs again when they were cured or non-infectious. If not already under treatment, these men were advised where to receive proper care and were warned specifically against quacks. This course must be conceded as justifiable because otherwise employees will not consult the doctor in the plant concerning venereal diseases for fear of permanently losing their positions.

Naturally, in an effort to keep venereal disease out of a plant all applicants suffering from any of these diseases were rejected, but at the same time were told where proper treatment might be obtained.

Hemorrhoids were present in 8.5 per cent. All cases showing this condition were examined by rectum as well for possible carcinoma, but none were rejected for this condition alone. All were warned against constipation and were informed of the relief afforded by operation.

Flat feet presented in 3.6 per cent of the men and none is here included unless moderately severe or painful. These were advised to wear supports and, if not relieved, to take exercises aimed at the strengthening of the foot and calf muscles. Only those with difficulty in getting around and pain on standing were rejected.

Stiff joints presented in 0.6 per cent of cases. The men already working were usually in positions that they could take care of, but where such cases were badly placed, a transfer to such was effected. In the case of the new worker, unless the job fitted the individual's ability to care for it he was rejected. Here let me say a word of the need for the industrial physician to make a job analysis of his own, so as to be better able to help the employment manager to fit the

round peg into the round hole. I have found that an occasional trip through the factory is of great help in learning the name and nature of each job. Otherwise, unless this is always considered, one is working in the dark as to the needs of the job and the man.

### High Blood Pressure

More than 150 systolic blood pressure characterizes this classification, which includes 7.8 per cent of the series. This figure is an arbitrary one taken for classification. The sufferer already working, if symptomless and uncomplicated by cardiac or renal disease, was not disturbed in his position. If, however, there was danger of attacks of vertigo or greatly increased pressure due to severe exertion, effort was made to have the man transferred to a safe place of labor, even though the work might be the same.

If complicated by albuminuria, as some were, or with improper cardiac action, I always had them see their family doctor for observation and treatment. Rejection was made of all above 170, if uncomplicated, and those above 150, if complicated, as this appeared the only safe way.

Chronic suppuration, whether from bone or soft parts such as an ischio-rectal abscess or suppurating adenitis, was a cause for rejection of applicants; if already at work, proper treatment was given. This type of case is relatively infrequent, but such conditions occurred often enough to demand a set policy.

In 3.3 per cent there was some form of skin lesion, not including eczema rubrum. Various types were met with, of course, but only those of contagious type, such as scabies and impetigo, were laid off until cured, if at work. Instructions were given in all cases as to proper treatment and the precautionary measures to be taken. The others were merely informed of the proper treatment, if they were not already receiving it. In applicants, eczema, if bothersome, and the work to be done were wet, and the easily transmissible types were rejected, but acne and psoriasis were passed unless they were so severe that the fellow workmen might object to the appearance of the patient. In the Campbell plant, especially, care was exerted to prevent the appearance of skin diseases in workers handling food. All permitted to go to work were advised to get treatment and were told of the usual long duration and of the persistent effort necessary to effect a cure.

Varicose veins were present in 4.7 per cent in moderately severe form or worse. Eczema rubrum was present in 8 per cent of the cases showing varices, and three severe varicose ulcers were encountered. Those of the men already at work were strongly advised to get elastic support, either a stocking or a bandage, and in case of men in particularly hazardous work, where the shin was apt to be struck and thus induce ulcer development, these men in the plant were told of the dangers of ulcers developing under the existing conditions. In such locations some men wore shin guards. Operation was discussed but not strongly urged. Applicants with proper support were permitted to go to work, but those severe cases with ulcers or eczema rubrum were all rejected.

### Disease of the Kidneys

In 2.6 per cent of five hundred urinalyses albumin was present in the urine. No microscopical examination was made, but the urine of all those noted was clear. This condition was noted in two types of employees,—the undernourished and semi-sickly youth and the adult with some cardiac or arteriosclerotic changes. The cases were about equally divided. The work of each case was investigated and if not too heavy was not changed, but all were urged to see their family physician for treatment of the condition. The applicants showing albuminuria, whatever the cause, were rejected and advised to get in touch with a doctor for treatment.

Numerous other conditions were noted in occasional cases and each was taken care of as it arose, but all in the same manner as herein indicated, differently in the case of men already at work and in those about to be put to work, but the conditions herein stated are representative of all the defects.

A few specific instances of the transfers effected may not be amiss here. A weigher with less than 10/200 vision in one eye and 10/70 in the other was put to pushing trucks until he was fitted with glasses. A laborer on a wringing machine, with a blood pressure of 205, subject to giddy attacks, was put to cutting tanned skins in half. A boy on a buffing machine who developed a dry cough was transferred to a machine stretching wet hides. A deaf man working near machinery was changed to unloading freight cars. A man working in an overheated atmosphere was losing weight and grew tired easily. He was transferred to a ware-

house handling empty boxes. A man with painful flat feet was given a high stool and was able to continue with the same work he had done before while standing all day long. A man, rather intelligent for a laborer and with a long record of loyal service, was given a job as night watchman when, due to cardiorenal disease, he was no longer able to continue in previous work. A man with eczema was transferred from wet to dry work, etc.

In conclusion, in summing up the work done, several points are emphasized as of prime importance to the examiner:

(1) The necessity of the doctor knowing his plant so that he can fit the man to the job and the job to the man.

(2) The necessity of having the subject stripped so that all defects can be noted.

(3) The necessity of allowing sufficient time for each examination so that the proper advice can be given the men, for thus they realize that the doctor is telling them things for their own benefit as well as to increase production by getting them physically fit.

(4) Fearlessness on the part of the examiner in checking up the treatment being given by other doctors for various defects.

(5) Finally, the industrial physician ceases to be ethical he becomes absolutely subservient to his employers and forgets the humane side which he should show the employees in treating them as individuals.

### Lives Lost in Mines

The United States Bureau of Mines, in summarizing the report from the various state mine inspectors, shows that 158 men were killed during May, 1921, in and about coal mines in the United States as compared with 163 last year during the same month. This is a decrease of five fatalities, or about 3 per cent. The average number of lives lost during May of each year from 1913 to 1920 has been 176. During the first five months of the present year 806 men have been killed by accident at coal mines as against 874 for the corresponding month in 1920, a decrease of sixty-eight fatalities, or 7.8 per cent. These figures represent a fatality of 4.01 per million tons mined in 1921, and 3.57 per million tons mined in 1920.

## Labor Camp Sanitation of California\*

### Comfort and Normal Home Life With No Lapse in Health or Citizenship Standards is the Objective

By R. JUSTIN MILLER, ATTORNEY AND EXECUTIVE OFFICER OF THE COMMISSION OF IMMIGRATION AND HOUSING OF CALIFORNIA, SAN FRANCISCO, CALIF.

IN "Immigrant Health and the Community," recently issued as one of the series of "Americanization Studies," by the Carnegie Corporation, on page 367, is to be found the following statement concerning labor camp sanitation in California.

The Commission of Immigration and Housing of California has developed standards for labor camps which may serve in many respects as models for the country. The problem in California is peculiar because of the climate and the characteristics of the Mexicans, who are a predominant element in the agricultural sections of the state. The Mexican laborer generally has his family with him, and they move as a unit from one place to another. For these workers the commission has provided small family houses and supervision of sanitary regulations. It has been equally successful in its work in the mining and lumber regions where the labor camps problems are similar to those elsewhere in the United States.

This appreciative statement is correct so far as it goes. However, if the value of California's work is to be properly understood, and fully utilized by other agencies, the statement must be greatly enlarged. Though many of the labor conditions of California are undoubtedly peculiar to that state, at the same time, the very

diversity of labor conditions which do exist, makes it possible in a study of these conditions to visualize the labor camp conditions of practically the whole United States. It is true that the agricultural industry of the state constitutes one of its most important interests, but the elements of that industry range from the staple products of the extreme South, such as cotton, rice, and citrus fruits, to the staples of the extreme North, such as apples and grain. In California are to be found the highest

and the lowest elevations of land in the United States, and a wider range of temperature where humans are employed than any other state. The map shown in Figure 2 will indicate generally the areas in the state in which labor camps are located. The map is not complete in this respect, for during each year, some parts of the state cannot be reached by the comparatively small force of inspectors available.

What is more, the enumeration of mining and lumber camps in addition

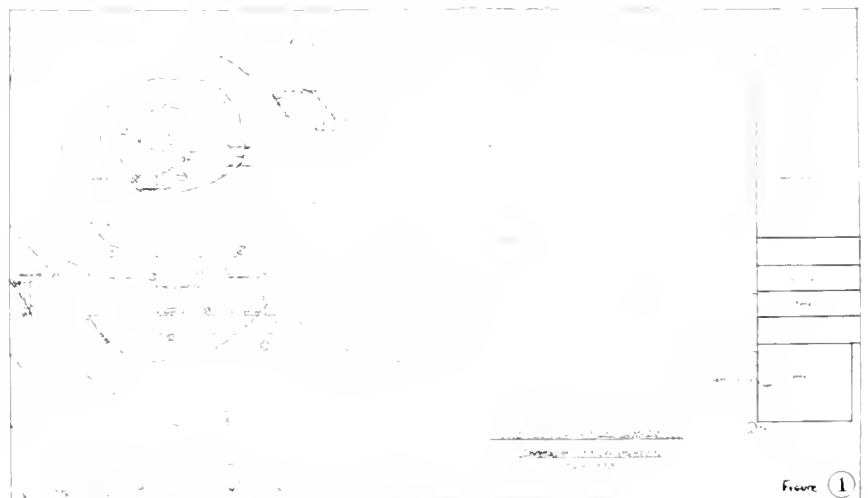


Fig. 1—Suggested layout for a model camp, giving elevations, distances, and in general the required equipment needed in such a camp

\*This report will be concluded with Part II, in the December issue of THE NATION'S HEALTH.



Fig. 3—This camp layout is a fair example of what camp conditions should not be

to those of agriculture, does not by any means complete the list. This fact will quickly appear from an examination of Table I.

TABLE I—CALIFORNIA LABOR CAMPS INSPECTED FROM JANUARY 1, 1920, TO JANUARY 1, 1921

Asparagus (T)	37
Beet (sugar) (T)	113
Berries (T)	13
Broom corn (T)	1
Cotton (T)	170
Fruit (deciduous) (T)	312
Grain (T)	3
Hops (T)	136
Melon (T)	30
Rice (T), October-January	235
Vineyard (T)	27
Walnut (T)	52
Cannery (T & P)	39
Citrus fruits (T & P)	5
Construction (T & P)	201
Packing house (T & P)	1
Ranch (T & P)	218
Truck (T & P)	28
Dairy (P)	16
Farm (P)	15
Mining (P)	23
Nursery (P)	3
Oil (P)	91
Quarry (P)	12
Railroad (P)	10
Soda (P)	8
Lumber (P)	90

Total number of camps..... 2,022  
 T—Indicates temporary camps.  
 T & P—Indicates temporary and permanent camps.  
 P—Indicates permanent camps.

The titles "fruit camps," "grain camps," "construction camps," "mining camps," and others listed in Table I are subject to much greater sub-classification, covering as they do almost every branch of activity which can properly be classified under those heads.

In general the industries in which permanent camps are used are ones in which there is a long season of employment, extending throughout the year, or over a period of several months each year. In general the industries in which purely temporary camps are used are agricultural. These it must be remembered are industries of sufficient importance to warrant the calling in of extra labor during the harvest season. The many products which can be handled by the farmer and his family are not included.

The year-round nature of California's crops can well be shown by the following monthly crop analysis



Fig. 2—This map indicates generally the areas in the state of California in which the labor camps are located.

of industries in which temporary camps are used (in addition to truck gardening which takes place throughout the year):

*January.*—Citrus fruits—including

oranges, lemons, limes and grape fruit—cotton, rice.

*February.*—Asparagus, citrus fruits.

*March.*—Asparagus, citrus fruits.

*April.*—Sugar beets—thinning, etc.—asparagus, citrus fruits.

*May.*—Berries, cherries, barley, wheat, asparagus, citrus fruits.

*June.*—Apricots, table grapes, berries, cherries, oats, barley, wheat, asparagus, sugar beets.

*July.*—Apples, apricots, peaches, figs, pears, berries, cherries, table-grapes, oats, barley, wheat.

*August.*—Sugar beets, cotton, hops, raisin-grapes, table-grapes, plums, apples, apricots, peaches, figs, pears, oats, barley, wheat.

*September.*—Walnuts, rice, wine-grapes, raisin-grapes, table-grapes, sugar-beets, cotton, hops, prunes, plums, apples, peaches, figs, pears.

*October.*—Olives, citrus-fruits, walnuts, rice, wine-grapes, raisin-grapes, table-grapes, sugar-beets, cotton, apples.

*November.*—Olives, citrus fruits, rice, sugar-beets, cotton.

*December.*—Olives, citrus fruits, rice, cotton.

### Problem is Intricate

The intricacies of the labor camp problem in California, too, cannot be limited to the peculiar characteristics of the Mexican laborer. Although this is an important phase of the problem it is only a small part of it. The native born Americans, themselves, still constitute by far the most important part of the seasonal labor army. Anyone who has seen the exodus of the mothers and school children to the orchards and fields in vacation time can well understand that fact, as can one who knows of the great numbers who come by wagon and "flivers" from as far away as the Mississippi River, "seeing



Fig. 4 In arrangement and location the camp shown here is highly satisfactory. This is a feasible arrangement when the work and location are fairly permanent

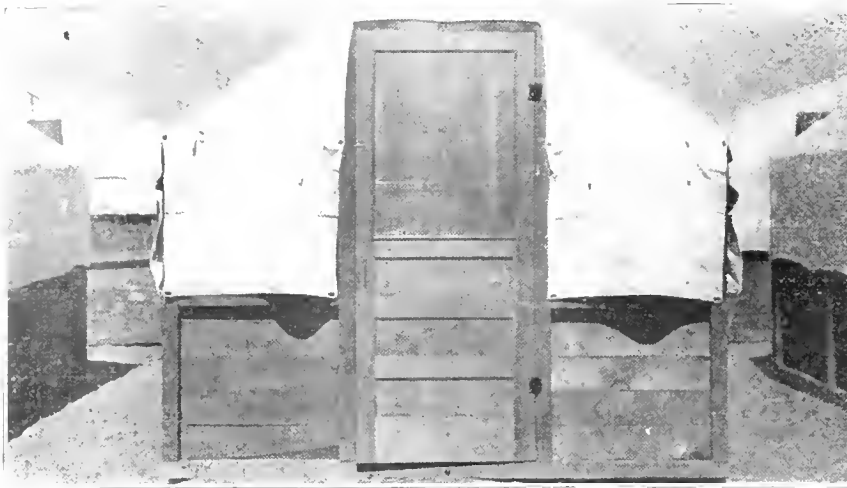


Fig. 6 This tent platform with canvas cover is a type of the sleeping tent recommended. Dining tent and kitchen are of the same construction.

America first" and incidentally paying as they go by working along the way. Last winter in Sacramento, at an impromptu mass meeting of unemployed (men) those who had called the meeting were surprised to find that approximately ninety-five per cent of those present were Americans; many of them ex-service men. Sacramento is one of the greatest labor distributing markets of the state and men of the more roving sort are to be found on the streets and around the employment agencies of that city at all times of the year.

It is true that the figures given regarding the mass meeting mentioned above do not constitute a correct index of the percentage of Americans who live in California's labor camps. Table II, entitled "Nationalities of Employees in California's Labor Camps" will indicate the nature and extent of this phase of the problem. The proportions vary from year to year; in some years the total of foreign-born predominating and *vice versa*. It will be noted that during 1920 there were more native-born than foreign-born, while the figures for 1921 show a preponderance of foreign-born. It will be noted also that in 1921 the Japanese number nearly twice as many as the Mexicans, and that there are approximately as many Chinese camp employees as Mexicans. The figures for 1921 will be tremendously increased when the reports come in for the busy summer and autumn months.

TABLE II. NATIONALITIES OF EMPLOYEES IN CALIFORNIA LABOR CAMPS.

	1920	1921
Americans	37,356	7,537
Mexicans	8,109	1,862
Japanese	3,232	3,268
Italians	2,557	352
Spanish	1,368	834
Chinese	1,293	1,851

Portuguese	959	501
Scandinavians	299	142
Hindus	279	139
Greeks	272	12
Finnish	156	29
French	227	13
Slavonians	227	39
Russians	210	10
Armenians	203	2
Germans	182	60
Koreans	155	
Negroes	154	
Filipinos	98	250
Swiss	92	19
Austrians	78	6
Irish	66	16
English	39	22
Poles	32	1
Servians	12	
Scotch	9	2
Dutch	6	
Canadians	4	
Australians	4	
Belgians	3	
Syrians	2	
Hohemans	2	
Bavarians	1	
Miscellaneous		19

Total number of camps where information on nationalities was not available 325

Population of these camps 15,691

The foregoing introductory statement will provide a background for an analysis of the specific problems involved in the work of labor camp sanitation together with the legal requirements relating thereto and the

inspection and educational methods which have grown up in connection therewith. The history of the work covers a period of only eight years, or since August, 1913. Prior to that time there can be only speculation as to the number, character, and quality of labor camps in California. It is certain that there were some good camps in the state at that time and some very poor ones. Very substantial protests had been made against some of the more deplorable conditions; a spirit of serious discontent had grown up among the workers; and the rapidly increasing menace to health, morals, and property had become very evident. The state legislature of 1913 took the first necessary steps to meet the situation, by the passage of the Camp Sanitation Act of that year. The Act took effect just seven days after the now famous Wheatland Hop Riots of 1913, in which two public officials and two workers were killed. The riot grew out of the bad camp conditions existing on the ranch where it occurred; these bad conditions being used as propaganda by some professional agitators who were working in that neighborhood.

The enforcement of the Act by the Commission of Immigration and Housing was begun during the following winter and has resulted in the practical elimination of conditions such as those which existed at that time.

### Definition of Labor Camp

The Act as originally drafted was made to apply to all camps "where five or more persons are employed." This is the closest approach to a definition which is to be found and it remains the same to the present date. The question has been asked



Fig. 5 Purely temporary camps are made habitable by specified portable equipment. It is a real economy in the long run to provide good camps.

many times: "Why stop at five?" Of course, as a matter of fact it is as much a labor camp if four or even three persons are employed as if five or ten happen to be there. The answer is that any number less than five approaches too closely to the one family situation of the ordinary farm, where the hired man or the two or three hired men are still regarded to some extent at least as members of the family. One of the most important effects of the representation of the "embattled farmers" in our legislatures has been to exempt the farm from the provisions of much beneficial legislation. The farmer complains bitterly of his inability to keep his own boys on the farm and of the trouble he experiences in getting and holding reliable farm labor, but if you suggest to him or to the farmer legislator that the provisions of the Workmen's Compensation Act or of the Camp Sanitation Act should be made applicable to the farm, he complains again, even more bitterly, and with his vote "protects" himself from such legislation. Eventually its beneficial effects will become so apparent that the scope of the law will be extended as a matter of course.

### The Camp Layout

"Bunk houses, tents, or other suitable sleeping places" are required to be furnished for all employees. Of course many camp operators have supplied such facilities from time immemorial, but "in the old days" many operators furnished no facilities except those which nature had already provided. Piles of straw, creek bottoms, even manure piles, and the ground itself often constituted the only equipment available to the camp laborer.

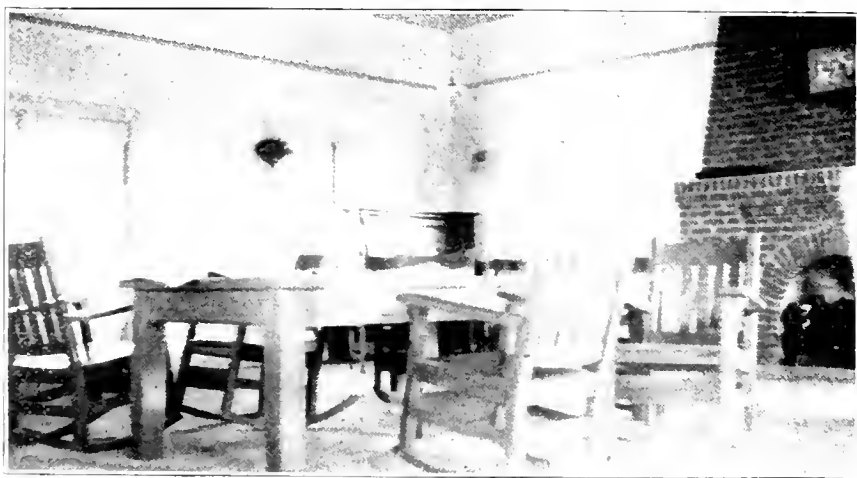


Fig. 6 Along with improved sanitary conditions, an advantage in efficiency and stability is afforded by the provision of recreation rooms and features for entertainment.

The bunk houses, tents, etc., are required to be kept in good structural condition "and so constructed as to provide shelter to the occupants against the elements and so as to exclude dampness in inclement weather." It is necessary, of course, that great care should be used in choosing the original camp site and in locating the camp buildings. Usually good clear land, well drained and conveniently located, can be easily found. Sometimes it is a serious problem to find a good camp site and then all that can be done is to make the best of conditions as they exist. It is surprising how frequently, when these camps are allowed to locate themselves, they are to be found in swampy depressions with involved drainage problems, when ideal grounds could have been secured only a few yards away. Figure 1 is a suggested layout for a model camp, giving elevations, distances, and in general the entire equipment needed in such a camp.

In connection with the plan shown in the figure the Commission issues the following set of rules:

### Rules for Location of Camp

(1) Every camp should be located as near as possible to a plentiful supply of pure water.

(2) Every camp should be located on well-drained ground. Low plains, swamps and wet areas should be avoided, on account of both the discomfort attached to wet quarters and the possibility of affording breeding places for malaria-bearing mosquitoes.

(3) When a camp is built on the side of a hill a deep ditch should be dug above it to prevent the drainage water during the rain from running through the camp.

(4) As sunshine is the best disinfectant, camps should be located in open spaces. Exception to this rule should be made in the case of temporary fruit camps which operate during the hot and dry weather, where shaded locations should be chosen.

The photograph in Figure 3 showing a bad camp layout, is sufficient to speak for itself. In decided contrast to the insanitary condition shown in this camp are the well arranged camps shown in Figures 4 and 5. In many cases the problem of camp location is a complex one, because of the short "season" or because of frequent changes in location as in the case of highway construction camps. It may be found sometimes that although the "season" which requires the establishment of the camp is comparatively short, at the same time, it will be more economical to build a permanent or semi-permanent camp, or one which can be moved practically intact from place to place. Frequently, of course, the season is so short or the work is so isolated that a purely temporary camp must be used. Fortunately the expense of equipment in such cases



Fig. 7—Community camps are often possible in districts where work on small farms is necessary from the community camp which provides a home for the workers for the whole summer.

is usually not so great but that even then the operator can see that it is real economy in the long run to provide good camps. Where this is true the operators are usually instructed to build tent platforms and side frames over which a tent can be set up, during the season; the canvas being stored during the balance of the year. Camps of this character are well illustrated by Figure 6. The photograph shows only the sleeping tents, but the dining tent and kitchen can be arranged in the same manner. Camps of this character are also frequently used by highway contractors and are moved from place to place or broken up at the end of each job.

A very interesting development

which is growing out of the comparatively large expense to small operators when individual camps are maintained is the establishment of "Community Camps." A good idea is given in Figure 7 of the results secured by one cooperative community effort of this kind. The camp shown in this photograph is located near a small town in the San Joaquin Valley in the center of a deciduous fruit and raisin-grape district. Good paved roads are very general throughout the district and it is possible for the workers to go easily from one farm to another, using the community camp as a home during the whole summer. In this way many small producers find a steady supply of labor without

the trouble or expense of maintaining their own camp. The number of these community camps, usually maintained by associations of growers, are increasing rapidly throughout the state and the equipment supplied is frequently more elaborate than required by the law. This tendency is a growing one also among many of the operators of permanent camps, such as the lumber and mining camps. The recreation room shown in Figure 8 is a good example of the comfort and means of diversion provided for laborers in these camps. In some camps large halls, equipped for dancing and motion picture exhibitions, are also to be found.

*(To be continued)*

## The Warehousing of Dispensary Supplies

BY RALPH W. ELLIOTT, M.D., MANAGER, MEDICAL DEPARTMENT, NATIONAL LAMP WORKS OF GENERAL ELECTRIC COMPANY, NELA PARK, CLEVELAND, O.

NO DOUBT various industrial organizations have adopted some plan or other for the solution of problems arising in the administration of widely separated subsidiary medical departments or dispensary service.

It has been found that there are undoubted advantages in the centralization of buying and in the distribution of all medical, surgical and dental supplies from one source. As a result of more than five years' experience we have perfected a system for the handling of this troublesome problem. This scheme enables the Medical Department to supervise the type of supplies used and to check up and standardize methods of treatment. The details will necessarily vary according to the individual needs of different organizations, but the essentials as outlined herein will serve as a working basis. In addition to the supervision mentioned above, there is an undoubted saving effected in the purchase of such supplies because of the advantage of buying in large quantities and further in the supervision of certain special formulae which have been found advantageous in the treatment of cases frequently met with in our dispensary service.

### Purchase of Supplies

The active agent in the scheme of operation is the Purchasing Department which buys all supplies on the recommendation of the Medical Department. The Purchasing Department maintains a warehouse stock

upon which the various dispensaries in our widely separated Divisions draw by requisition. The Purchasing Department maintains a continuous inventory of all supplies on hand. A "Maximum" and "Minimum" amount has been fixed which is advisable to carry in stock. These maximum and minimum quantities depend, not only upon total volume used during the year by our dispensaries, but also on the quantity prices that we have been able to secure by placing orders to the best advantage.

In our experience the supplies that are ordered, which do not appear on this Warehouse List, are surprisingly small and are confined, as a rule, to certain articles that are of use only in a dispensary located where local conditions make it necessary to depart from the established practice.

In general, all orders that are placed for articles not included in the Warehouse List are referred by the Purchasing Department to the Medical Department for approval. This is to eliminate unnecessary extravagance and also to endeavor to confine our supplies to items listed in our warehouse stock. Not infrequently it has been found that other items ordered are so nearly identical with supplies in our warehouse that with a word of explanation standardized articles can be furnished from the warehouse which are perfectly satisfactory.

In the actual makeup of the warehouse list there are several points that we have learned by experience

which should be noted in order to avoid a certain amount of confusion. Various articles, for convenience, have been classified under different headings and have been printed on separate sheets in order to facilitate the making of carbon copies. These sheets are then attached to, and made a part of, the standard order form. The order number on this standard form appears on each separate sheet of the warehouse list.

All the supplies have been made up in standard packages the unit of which corresponds to the amounts best adapted for use in our several dispensaries and further corresponds roughly to the sizes of our shelf bottles and containers.

Under "Special Formulae" have been listed various remedies which, by experience, have been found especially valuable in the treatment of certain cases in our own industry. The ingredients in these special remedies do not appear on the Warehouse List but are furnished to each dispensary in detail in order that the doctor, dentist or nurse in charge may know exactly what they contain and so be governed in dispensing.

A stock as comprehensive as that indicated in the accompanying lists should only be supplied where there is a physician in charge of the dispensary. It is both unwise and perhaps illegal for a nurse to dispense from such an assortment except under the supervision of a physician.

All supplies received in the ware-



house are checked by a doctor or dentist before being placed in stock

This should not, of course, be regarded as a complete list applicable to every type of industry, but must

be varied according to the peculiar needs of that industry, the proximity of hospital service to each dispensary, and with consideration of the age and sex of the majority of the workers.

The lists appended are revised about once or twice a year in accordance with suggestions by the plant physicians as to the usefulness of the remedies and supplies listed.

### FORM FOR STOCK KEEPING

ARTICLE	UNIT	TR	PRICE
DATE	ORDERED	REFUSED	REG. NO.
DELIVERED	IN HAND	DATE	REFUSED
RE. L. A. D.	REG. NO.	DELIVERED	IN HAND

### Division Order No. .... WAREHOUSE LIST OF MEDICAL SUPPLIES

#### Items and Standard Package

A. B. S. & C. Pills, with Phenolphthalein—1,000 tablets.  
Acetyl-Sal. (Aspirin), grs. 5—1,000 tablets.  
Acetic Acid, 5%—8 ounces.  
Acid Boracic, crystals—1 pound.  
Alcohol, medicated—2 gallons.  
Alkaline Antiseptic Tablets, molded—1 pound  
Applicators, wooden—1 box.  
Argyrol, crystals—1 ounce.  
Atomizer, De Vilbiss, No. 15—one.  
Benzyl Benzoate, caps., grs. 5—100 capsules.  
Bichlorid Mercury, grs. 7½ 100 tablets.  
Bismuth Subnitrate, grs. 5—100 tablets.  
Bland Pill Co., grs. 10—500 tablets.  
Carron Oil, solidified, in 4 oz. tubes—6 tubes.  
Calomel, gr. ½ 100 tablets.  
Cascara Sagrada, grs. 5—500 tablets.  
Castor Oil—8 ounces.  
Cathartic Compound:  
Calomel, Colocynth and Rhubarb, each, gr. 2—500 tablets.  
Caustic Applicators:  
Length, 2 in.—12.  
Length, 6 in.—12.  
Clinical Thermometers, Tyce's—one  
Coincain Tablets, gr. 1½ (for anesthesia) (U. S. narcotic blank necessary)—100 tablets.  
Collodion, Squibb (stoppers with brushes)—½ ounce bottles.  
Dobell's Solution (tablets)—250 tablets.  
Envelopes, manila, 2½"x3½"—1,000.  
Epsom Salts, Squibb—1 pound.  
Eye Charts (test):  
Snellen Chart—one.  
Reading Chart—one.  
Astigmatic Chart—one.  
Eye Cups, glass—one.  
Fehling's Solution, No. 1—1 quart.  
Fehling's Solution, No. 2—1 quart.  
Filter Paper, 5"—1 package.  
Flasks:  
Erlenmeyer, "Pyrex," 500 c.c.—one.  
Erlenmeyer, "Pyrex," 1,000 c.c.—one.  
Erlenmeyer, "Pyrex," 2,000 c.c.—one.  
Glass, sedimentation (urine) 100 c.c.—one.  
Glass Jar, large, for dressings—one.  
Glass Jar, small, for pledges—one.  
Glass Graduates, conical:  
1 ounce, graduated in ounces—one.  
4 ounces, graduated in ounces and c.c.—one.  
8 ounces, graduated in ounces and c.c.—one.  
Glasses, extra high, for effervescing solutions—one.  
Hand Brushes—one.  
Lamps, for Jansen headlight—one.  
Litmus Paper, books:  
Blue—12.  
Red—12.  
Lysol 1 pint.  
Medicine Droppers—6 in box.  
Mercury Protoiodid, gr. ½ 100 tablets.  
Novocain, tablets, Style E—1 tube, 10 tab.  
Ointments:  
Boric Acid—8 ounces.  
Zinc Oxide—8 ounces.  
Ammoniated Mercury—8 ounces.  
See also: Carron Oil and Special Formula.  
Ointment Boxes, one-half ounce (Myer's)—12 boxes.  
Phenolphthalein, grs. 2—1,000 tablets.  
Picric Acid, sol. 1%—1 pint.  
Potassium Chlorate, grs. 5—1,000 tablets.  
Rhinitis Tablets (full strength)—100 tablets.  
Rochelle Salts (Squibb)—1 pound.  
Salol, grs. 5—500 tablets.  
Silver Nitrate, crystals—1 dram.  
Soda Bicarbonate (Squibb)—1 pound.  
Soda Bicarbonate, tablets, grs. 10—1,000 tablets.  
Soda Mint, grs. 5—1,000 tablets.  
Sodium Bromid, grs. 10—500 tablets.  
Sodium Phosphate (effervescing)—1 pound.  
Sodium Salicylate, grs. 5—500 tablets.  
Spts. Ammon. Aromat—8 ounces.  
Sun Cholera Tablets—100 tablets.  
Soap, liquid—2 quarts.  
Test Tubes, 6"x½"—12.  
Thyroid Tablets, gr. 2½, B. W. & Co.—500 tablets.  
Tincture Iodin—8 ounces.  
Tr. Opium Camp.—4 ounces.  
Vaselin—8 ounces.

### Division Order No. .... WAREHOUSE LIST OF SPECIAL FORMULAE

(See Typewritten List for Formula)

#### Items and Standard Package

Cathartic Comp.—500 tablets.  
Cough Lozenges—500 tablets.  
Cough Mixture—12, 3 oz. bottles.  
Calamine Liniment, improved—12 ounces.  
Dysmenorrhea, tablets (U. S. narcotic blank necessary)—100 tablets.  
Emulsion Benzyl-Benzoate—8 ounces.  
Headache Capsules, "Phenacetin comp." 500 tablets.  
Hexamethyl Comp.—100 tablets.  
Inhalation Mixture (use in Simplex Vaporizer) 8 ounces.  
Mercuric Salicylate Comp.—1 ounce.  
Painful Menstruation, "Acetanilid Comp." (U. S. narcotic blank necessary) 250 capsules.  
Sol. Sodium Iodide—12 ounces.  
Sprains, "Solidified Liniment"—12, ½-ounce.  
Spray, Nose and Throat—1 quart.

### Division Order No. .... WAREHOUSE LIST OF SURGICAL SUPPLIES

#### Items and Standard Package

Adhesive Plaster: Zinc Oxid, 3", 10 yds. in roll—1 roll.  
Bandages:  
Elastic Bandages, 2"—1 bandage.  
Elastic Bandages, 3"—1 bandage.  
Gauze Bandages, 1"x10 yds.—12 bandages.  
Gauze Bandages, 1½"x10 yds.—12 bandages.  
Gauze Bandages, 2"x10 yds.—12 bandages.  
Gauze Bandages, 3"x10 yds.—12 bandages.  
Basins, glass, 7" diameter—one.  
Basins, glass, 10" diameter—one.  
Cotton: Plain Absorbent—1 pound.  
Dressing Gauze:  
Handyfold, plain, sterilized, 6"x36", each package contains 30 pieces—1 package.  
Handyfold, plain, sterilized, 12"x36", each package contains 10 pieces—1 package.  
Handyfold, Perie Acid, gauze, 12"x18" each package contains 30 pieces—1 package.  
Plain, sterilized gauze, 25 yds., per box—1 package.  
Plain, sterilized, 100 yds. bolt—1 bolt.  
Ether, for anesthesia—1 quart.  
Fuse, for instrument sterilizer—one.  
Hypodermic Needles (specify make of Syringe, thread and gauge):  
Ligatures:  
Catgut (Emergency Tubes)—6 tubes in each box.  
Plain, No. 6—1 box.  
Plain, No. 1—1 box.  
Plain, No. 2—1 box.  
Chromic, No. 1—1 box.  
Horseshair (Emergency tubes, fine), 6 tubes in each box—1 box.  
Silkworm gut (Emergency tubes, fine), 6 tubes in each box—1 box.  
Needles, Surgicid (specify size, etc.)—12.  
Rubber Gloves, medium (specify size)—1 pair.  
Sanitary Napkins Medium—1 gross.  
Safety Pins—1 gross.  
Splint Wood—1 package (12).

### Division Order No. .... WAREHOUSE LIST OF SHELF BOTTLES

#### Items and Standard Package

Salt Mouth, Eight Ounces—Glass Labels:  
Acetanilid Comp.—1 bottle.  
Acetyl-Sal.—1 bottle.  
Bismuth Subnitrate—1 bottle.  
Bland Comp.—1 bottle.  
Calomel—1 bottle.  
Cascara Tabs.—1 bottle.  
Cathartic Comp.—1 bottle.  
Cough Comp.—1 bottle.  
Dobell's Sol. Tabs.—1 bottle.  
Hexamethyl—1 bottle.  
Phenacetin Comp. ½—1 bottle.  
Phenolphthalein—1 bottle.  
Rhinitis—1 bottle.  
Salol—1 bottle.  
Soda Mint—1 bottle.  
Sodium Bromide—1 bottle.  
Sodium Salicylate—1 bottle.  
Tincture—Eight Ounces—Glass Labels:  
Alcohol—1 bottle.  
Argyrol—1 bottle.  
Castor Oil—1 bottle.  
Inhalation Mixture—1 bottle.  
Menthol-Camphor Comp.—1 bottle.  
Paregoric—1 bottle.  
Tinc. Iodin—1 bottle.  
Spts. Ammonia—1 bottle.  
Bottles (empty) washed and corked:  
One-half ounce—12 bottles.  
One ounce—12 bottles.  
Three ounce—12 bottles.

Division Order No. ....  
**WAREHOUSE LIST OF DENTAL SUPPLIES**

Items and Standard Package

Burs (each package contains 6 burs) 1 package

Straight, round, No. 1.  
 Straight, round, No. 4.  
 Straight, round, No. 7.  
 Straight, inverted cone, No. 34.  
 Straight, inverted cone, No. 37.  
 Straight, inverted cone, No. 40.

Right Angle, round, No. 1.  
 Right Angle, round, No. 4.  
 Right Angle, round, No. 7.  
 Right Angle, inverted cone, No. 34.  
 Right Angle, inverted cone, No. 37.  
 Right Angle, inverted cone, No. 40.  
 Fissure Taper Cone, right angle, No. 2.  
 Fissure Taper Cone, right angle, No. 5.  
 Fissure Taper Cone, right angle, No. 8.  
 Spear Point Drills, No. 2.  
 Spear Point Drills, No. 5.  
 Spear Point Drills, No. 8.

Cotton and Napkins:

Absorbent (plain)—1 pound.  
 Absorbent Pledgets, small—500.  
 Aseptic Dental Napkins, 6"x6", J. & J.—500.  
 Cotton Rolls, 6"x3-8", J. & J.—500.

Filling Material:

Calxine (one portion, liquid and powder)—1 package.  
 Caulk's Cement, four-portion package—1 package.  
 Temporary Stopping, S. S. W., light 1 box.  
 True Dentalloy—1 ounce.  
 Mercury—1 $\frac{1}{2}$  pound.

Medicines:

Ammonium Fluoride—4 ounces.  
 Chromic Acid (16%), 1—1 ounce.  
 Silver Nitrate, crystals—1 dram.  
 Dentalone (P. D. & Co.) 1 ounce.  
 Mouth Wash, concentrated (Sherwood) 1 quart.  
 Glycerine 4 ounces.

Prophylaxis:

Pumice, fine—1 pound.  
 "Prophylox-O" tablets 100.  
 Dental Floss:  
 Round—24 yards.  
 Ribbon, flat—24 yards.  
 Orange Wood Points—1 box.  
 Prophylactic Brushes (Crescent Improved) 12.  
 Prophylactic Cups (Young)—12.  
 Tooth Powder—1 gross.  
 (Send copy for printing division imprint on label.)  
 Tooth Brushes 1 gross.  
 Prophylactic Disk, white only, R. & R.:  
 Style A—1 box.  
 Style B—1 box.

Root Canal Work:

Broaches, fine, S. S. W.—6.  
 Broaches, extra fine, S. S. W.—6.  
 Kerr's Universal Brough, style B:  
 Coarse 6.  
 Medium—6.  
 Fine—6.  
 Absorbent Points, fine, J. & J.—200.  
 Gutta Percha Points (assorted), 1 box—150.

Miscellaneous:

Euse for instrument sterilizer—one.  
 Rubber Dam, 5"—1 roll.  
 Mouth Mirrors, "Boile"—1.  
 Magnifying—one.  
 Plain—one.  
 "Schimmel" Needles (specifying size and length)—one.  
 Sand Paper Strips, assorted 1 box.  
 Cattle Fish Disks, medium grit, 5-8"—1 box.  
 Sand Paper Disks, 5-8" Medium grit 1 box.  
 Paper Cups, Lily 100.

**WAREHOUSE LIST OF PHOTOGRAPHIC SUPPLIES**

(See also Dark Room Equipment)

Dental Films, No. 1—12.  
 Dental Films, No. 1 (extra fast)—12.  
 Dental Films, No. 2—12.  
 Seed X-Ray Plates, 5"x7" 12.  
 X-Ray Envelopes, 5"x7", Black 12.  
 X-Ray Envelopes, 5"x7", Orange—12.  
 X-Ray Developing Powders, No. 2 1 box.  
 Hard Rubber Trays, 5"x7"—one.  
 Acid Hypo—1 pound.  
 Dental Film Clips, No. 2—12.  
 "Philmounts":  
 Size 1 (one No. 1 film)—12.  
 Size 112 (two No. 1 films)—12.

Division Order No. ....  
**WAREHOUSE LIST OF FORMS**

Form No. and Title

86-1091—Physical Examination.  
 86-818 Clinical Record.  
 86-1213—History Envelopes.  
 86-3920—Defective Vision.  
 86-3418—Monthly Report.  
 86-1155—Prescription.  
 86-4009 Warehouse List (specify by form number and letter sheets wanted).  
 86-3565—Foreman's Notification Card.  
 86-1092—Dental Examination.  
 86-1094—Dental Card of Introduction.  
 86-1096—Dental Dispensary Report.  
 86-1221—Tooth Brush Envelopes.  
 86-1292—Tooth Powder Label.  
 (Send copy for imprint for Division label.)

## Ohio Rules on Hospital Contracts

THE Industrial Commission of Ohio, after conference with hospital representatives of the state, has completed a set of rules and regulations governing its contracts with hospitals for the care of workmen's compensation patients. While the new rules are not materially different from those which have been in force previously, they are more comprehensive and also more clearly defined, and are expected by the Commission to be the means of eliminating some grounds of dissatisfaction between the Commission and the hospitals in the past. A draft of the rules, which are retroactive to July 1, follows:

(1) (a) *A Hospital Patient*.—An individual appearing on the record as an admitted patient but will not include patients applying for after care following discharge from a hospital or from the care of a physician.

(b) *Unit Census Period*.—Twenty-four hours from midnight of one night to midnight of the next.

(c) *Patient Day*.—Appearance on the census of treatment rendered entirely within a unit census period.

(d) *Private Room*.—A room containing not more than one patient's bed.

(e) *Semi-Private Ward*.—A room containing more than one patient's bed, but not more than four beds.

(f) *Ward*.—A room containing more than four patient's beds.

(g) *Donated Service*.—Service of an individual rendering continuous service to a hospital for which no direct comparable monetary compensation is made.

(h) *Donated Supplies*.—Commodities such as are currently consumed in a hospital's operation.

(2) The basis of compensation of hospitals for the care and treatment of Industrial Commission cases shall be the average patient-day cost (per capita cost) of operating the contracting hospital during the previous calendar year, as determined by satisfactory data reported to the State

of Ohio, Department of Health, under Section 1236-6 G. C.

(3) The Industrial Commission will enter into formal contract with each hospital for each calendar year for the care of compensable cases at a rate equal to the patient-day cost of operating each hospital.

(4) The average patient-day cost shall be determined by dividing the total cost of operation by the total number of days hospital treatment given in the same period.

(5) The total number days hospital treatment for any given period shall be the sum of the number of days treatment given each day of the period. The number of days treatment given each day shall be the patient census as of midnight of that day plus the number of patients who have been both admitted and discharged during the unit census period. Each birth shall be recorded as an admission on the day of birth. Deaths shall be recorded as discharge on the day of death.

(6) The number of days treatment for which compensation may be claimed for a compensable case shall be equal to the number of times the patient appears upon the hospital census, provided that one day may be charged for patients both admitted and discharged within the twenty-four hour census period.

(7) The total operating cost shall include all money disbursements legitimately chargeable to operation, and may include such sums for donated service and supplies as may be deemed proper.

(8) Claim for addition to actual operating disbursements to make allowance for donated service will be recognized only when a detailed statement of service for which such claim is made is submitted in the annual report to the Department of Health.

(9) A schedule of fees to be allowed for donated services shall be fixed annually for the calendar year by a committee representing the organizations donating the services, the Department of Health and the Industrial Commission. The Chief Medical Examiner of the Industrial Commission representing the Commission as Chairman, shall appoint the committee members representing organizations donating service.

(10) The cost of all professional, scientific and ordinary services and supplies incident to the diagnosis, care and treatment of patients while in the hospital, except physicians and nurses' fees, shall be included in the operating cost, provided that such other service as may constitute a bona fide transaction between the patient and party other than the hospital shall not be included in the operating cost of the hospital. The evidence of such bona fide transaction shall be the non-appearance of any accounting for such services in the books of the hospital organization.

(11) Any claim for compensation for professional, scientific or ordinary service rendered an industrial commission patient which does not appear in the hospital accounts as bona fide transaction between the hospital and the patient, shall not appear in the hospital statement as a claim for compensation. Such claim shall be made in a separate statement by the party rendering the service. This shall not be construed to include individuals referred to a hospital solely for x-ray or laboratory service.

(12) A statement presented by any hospital to the Industrial Commission claiming compensation for services rendered shall specify:

(a) The total number of days treatment given.

(b) The number of days in private room, semi-private room, or in ward.

(c) If in semi-private room or ward, the number of beds in the ward.

(d) The total amount due for services rendered.

(e) The amount received from any other source for services rendered the same patient during the same period.

(f) The source of any payment received by the hospital in addition to that allowed by the Industrial Commission.

A statement shall be rendered for each case admitted. The character of service with respect to room or ward shall be that specified by the physician in charge of the case.

(13) The contract between each hospital and the Industrial Commission will definitely state which of the following services are included in the operating cost of the hospital: (a) Room and board; (b) Emergency; (c) Staff nursing; (d) Operating room; (e) Anesthesia; (f) X-ray; (g) Limited or complete laboratory.

No additional claim above the pa-

tient-day cost for services contracted for will be allowed. What limited laboratory service is specified, the scope of the service shall be specified.

(14) On petition from either party, disputed cases will be referred for decision to a committee appointed by the Chief Medical Examiner acting as chairman, said committee to represent in addition, the Ohio Hospital Association, non-members of the Ohio Hospital Association and the Department of Health. The committee will meet quarterly, and petitioners for hearing shall appear in person. Any petitioner not satisfied with the decision of the committee may appeal the case to the Industrial Commission.

(15) Whenever a hospital shall neglect to furnish data necessary for computing cost per patient per day, in accordance with these rules and regulations or shall neglect or refuse to enter into a contract on the above basis with the Industrial Commission of Ohio, compensation shall be made such hospital on a flat rate of not to exceed three dollars per day, no extra charges being accepted.

## Recent Compensation Decisions

THE death of a city fireman, resulting from unusual exposure while fighting a stubborn fire on a bitterly cold day, is not due to accidental injury, so as to entitle his beneficiaries to compensation, even though there was expert evidence that the ice which froze on his neck and head had injured his spinal cord by pressing on the vertebrae.

Within the Workmen's Compensation Act, which provides compensation only for accidental injuries, the word "accident" is used in the popular and ordinary sense, as an unlooked for mishap or untoward event, which is not expected or designed, and compensation cannot be awarded for an injury received in the course of employment through natural causes where the employee was no more subject to the injury than others similarly employed.—*Savage v. City of Pontiac Sup. Ct., Mich., July 19, 1921, 183 N. W. 798.*

THE Saint Louis Court of Appeals has held, June 21, 1921, that where a building laborer of experience was directed to cut a hole in a brick wall for a girder, his employer's failure to furnish goggles for him was not a breach of the employer's duty. The danger of being

struck in the eye by a flying particle of mortar caused by the use of hammer and chisel was an ordinary risk incident to the work in which he was engaged, and the employer is not liable for his injury when the laborer did not request the employer to furnish goggles.—*Wulfert v. March Brothers Construction Company, 232 S. W. 243.*

THE Supreme Court of California, August 2, 1921, awarded compensation to a truck driver whose crushed body was found within the line of the trail, made by the wheels of his truck. The evidence was held sufficient to support the findings of the Industrial Accident Commission that he was crushed to death by being run over by the truck. The Court states further that the burden is on the applicant for compensation to show that the injury arose out of as well as in the course of the employment; there being no presumption that because an injury occurs in the course of employment it arises out of or because of such employment.

If the incapacity of the truck driver with heart disease to drive his truck was caused by a heart attack brought on by exertion, sudden

shock, or excitement incident to his employment on the highway, compensation may be recovered for his death by being run over after falling off. But where the proximate and immediate cause of an injury is from disability arising solely from an idiopathic or subjective condition, compensation cannot be recovered under the Workmen's Compensation Act, though the injury clearly occurs in the course of employment.

The mere fact that an employee's state of health is such as to expose him to greater risks in performing his duties, or at times to incapacitate him from danger incident thereto, does not render such damages and risks less incident to the employment than if he were better able to meet them.

Where two rational conclusions can fairly be drawn from the evidence, one sustaining and the other opposing the right to compensation, the conclusion adopted by the Commission is beyond the scope of review by the court. A rehearing was denied September 7 and the Court held that the Commission's direct finding of the ultimate fact that the injury to deceased truck driver, who was run over by his truck, occurred in the course of and arose out of the employment cannot be disturbed by a negative finding that "in some unexplained manner, which, however, was probably not connected with any heart or other subjective ailment, he was caused to be thrown or to fall."—*George L. Eastman Co. v. Industrial Accident Commission*, 20 Pac. 17.

THE Supreme Court of Michigan, July 19, 1921, held that the evidence that a compensation claimant who had been employed as a foreman and inspector, which was skilled work, and who was still unable to perform the duties of that employment because of injuries received, though he had been employed by the employer since the injury, was still disabled, since he could not perform the duties of his previous employment, sustaining the findings of the Industrial Board.

In the same case the uncontradicted medical testimony that an operation of a minor nature on a workman's arm offered a good chance for restoring the use of his hand, which otherwise would be permanently disabled, and that the operation was attended with little or no risk, and could not injure the arm, was held not to sustain the Commission's finding that the workman's re-

fusal to undergo the operation at his employer's expense was reasonable.

An injured employee owes to his employer and to society the duty to adopt reasonable means to terminate his disability so that the unreasonable refusal of an employee to submit to an operation for which his employer agreed to pay warrants the suspension of compensation payments for total disability until he does undergo the operation.—*Myers v. Wadsworth Manufacturing Company*, 183 N. W. 913.

THE Iowa Supreme Court, July 14, 1921, gives a more liberal interpretation of the requirements of the Factory Act. It was there held that an employer may be under duty to an employee to guard dangerous machinery although the facts of the case do not bring it within the so-called Factory Act (Code Supp. 1913, sec. 4999 or 2).

The facts of the case are recited in the opinion of the Court: "The plaintiff alleges that defendant owned and used a steam traction engine, with which, together with other machinery, he was engaged in various lines of work, including the shelling of corn for others desiring such service, and that in carrying on said business he employed the plaintiff to operate the engine and assist in and about the operation and management of said machinery; that while so employed, and in the line of his duty operating a corn sheller with the power afforded by said engine he attempted to reach a lever by which the gear shifting apparatus of the machine was controlled, and in said act the glove upon his hand came in contact with some unguarded cogwheels, with the result that his hand was so drawn into the meshes of the machinery and so badly crushed and wounded as to necessitate its amputation. Plaintiff further alleges in his petition that 'defendant was negligent in that he failed to provide him with a safe place in which to work and that he failed to furnish safe machinery with which to work.'"—*Hainer v. Churchill*, 183 N. W. 624.

THE Supreme Court of Washington, July 28, 1921, affirmed the order of the Superior Court in awarding compensation for a disease, the proximate cause of death. The facts in the case are stated. On December 6, 1919, one Fred Anderson while engaged in an extrahazardous occupation received a cut in the foot from an ax. Immediately after

the accident he was taken to the bunkhouse located near the place of the accident where he received first aid. The wound bled somewhat profusely before the bleeding was finally checked, leaving him in a weakened and fainting condition. After the wound was dressed he was placed in bed; but, complaining of cold, he was taken to a stove in the bunkhouse where a hot fire was burning. The accident happened at about ten o'clock in the morning and later in the day, possibly about the middle of the afternoon, he desired to be taken to his home, some twelve miles distant. An automobile was called, which could not approach the camp nearer than about one mile, and this distance he was compelled to walk. The weather was cold and otherwise inclement at the time, and Mr. Anderson was exposed to it until he arrived at his home about seven o'clock in the evening. Shortly thereafter his wound was dressed. At this time he again complained of being cold and on the same evening had a chill. Two days later he developed lobar pneumonia. His illness immediately became severe, and he died from his effect December 28, 1919.

After the death of Mr. Anderson, his widow, made application to the Industrial Insurance Commission for compensation. The Commission rejected the application, basing its rejection upon the ground that the injury to the foot was not the proximate cause of Mr. Anderson's death. From the order of the Board there was an appeal to the Superior Court of Grays Harbor County, and that Court reversed the Commission's order, directing that her claim be allowed. From the judgment of the Superior Court the Commission appeals to this court. . . . "the fact that Mr. Anderson may have been imprudent in exposing himself to the weather in his condition does not militate against the right of his widow to compensation for his death. Nor is it necessary that the ax wound should have been of itself the cause of the death. It is sufficient if it was the proximate cause—the cause which directly set in motion the train of events which brought about the death.

"In our opinion the evidence justifies the conclusion and the judgment affirmed."—*Anderson v. Industrial Insurance Commission of Washington*, 199 Pac. 747.

Tuberculosis is defended by three allies—poverty, bad housing and drink.—Sir William Osler.

# INSTITUTIONAL HEALTH

*The Health Problems of Schools and Colleges, Hotels, Summer Camps, Children's Homes and Homes for Dependents*

## Detroit Provides Care of Tuberculous Children

**Favors Physical Health, and Gives Full Expression to Childhood Emotion and Instincts**

BY HENRY F. VAUGHAN, D.P.H., COMMISSIONER OF HEALTH, DETROIT, MICH.

**I**MRESSED by the success of the tent camp for malnourished children which was conducted during the summer of 1920, the Detroit Department of Health has now provided a permanent structure to house one hundred children. This will later be enlarged to accommodate twice this number. The camp site is the spacious grounds of the Municipal Tuberculosis Sanatorium near Northville, about twenty-five miles northwest of Detroit.

### Penalties of City Life

There is something fascinating about the open country in the summer time. We think of unending stretches of brownish-green fields, of swimming pool, fresh vegetables, milk, and then, after sunset, that delightful tired feeling which hastens sleep amidst the lulling influence of the crickets and other things which are accustomed to chatter on a summer's night. It seems a simple combination, and yet the pity of it is that thousands of a city's children can do little more than dream about such an exist-



The roofs are steep pitched and are surmounted in many places by weather vanes, making a picturesque grouping of buildings admirably adapted to their purpose of relieving these air-starved children.

ence. For most of them summer means hot pavements, hot shadeless yards, heated houses, airless rooms, and—well, there is nothing particu-

larly stimulating about this outlook. Most youngsters get through with it, although the babies too often wilt and die off before the cool relief of autumn.

Hardest of all does the summer hit the little chaps who haven't an average physical makeup—the anemic, the undernourished, those with tuberculosis already manifesting itself, those living with tuberculous fathers, mothers, or brothers and sisters. It is to this group that the new summer camp opens its doors.

Two years ago the nurses of the Health Department of Detroit submitted the names of one thousand one hundred children who should be in open air schools throughout the year. There was room for but 150. Since then space has been provided for another hundred. There will be more accommodations when school opens in the fall, and with the increasing facilities planned it will not be long before there will be room for all.

The Board of Education is now planning to establish open-air rooms in all new buildings and in many of



The several units are identified with plaster reproduction of Mother Goose fables—Three Men in a Boat, Old King Cole, Humpty Dumpty, etc. The high gables, quaint doorways and other unusual features delight the childish imagination.

the existing buildings. This will save the long rides to the few schools given over altogether to open-air classes.

In the fight for better health more and more attention is being paid to the school child and the pre-school child in order to neutralize those evil precursors of tuberculosis—physical defects, undernourishment and bad hygiene.

From a height and weight survey in the public schools of Detroit last January, it was found that 67 per cent of pupils below the high school were 15 per cent or more underweight. The group of children who were 10 per cent or more underweight represented one-fifth of the school population.

Special attention must be given to this question of malnourishment in order to cut off the supply of tuberculosis victims at its source. This last year a carefully controlled nutrition experiment has been carried on with one hundred children, fifty being furnished a hot noon lunch at the school and the other fifty used as a control with no supplementary feeding. Home visitations by nurses and dietitians have been paid to both groups in order to stimulate active home cooperation. It has been brought out that the most potent retarding influences to growth are physical defects, secondly, the lack of home cooperation and thirdly, the lack of a balanced diet or sufficient food. It will be the policy of the Health De-



Make conditions right for the children to live a free and healthful life and adult health conditions will largely take care of themselves. Physical deterioration, especially in tuberculosis conditions, may usually be charged to unfavorable factors in the early environment.

partment in the coming year to enroll in nutrition classes only those who are free from impairing defects, or in other words, those who are "free to gain."

In the meantime we must deal with the heritage of the past, namely, those children who have not been rescued from the initial unfavorable conditions and who in consequence are now precariously balanced between health and tuberculosis.

There is now being completed a Municipal Tuberculosis Sanatorium located on a nine hundred-acre tract near the village of Northville. This will open this autumn and will have a capacity of three hundred beds for

adults. The Sanatorium has entailed an expense of two million dollars.

In addition to this unit there will also be erected a preventorium for children, with accommodations for two hundred, this structure costing a quarter of a million dollars.

The third institution to be established on these grounds is the permanent summer camp for children, which was ready for occupancy about the middle of July.

### The Summer Camp

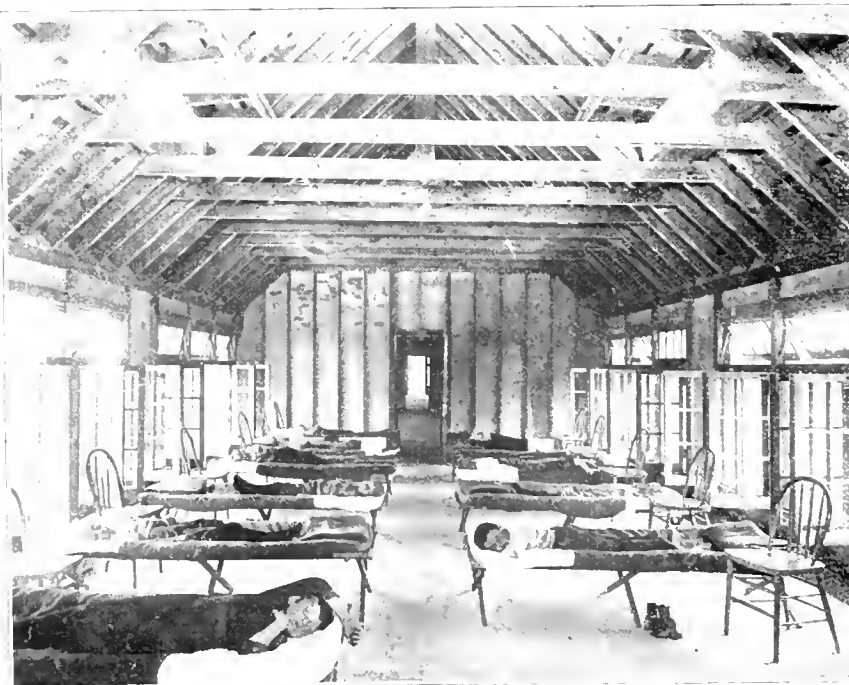
The new structure consists of two elongated one-story buildings with solid concrete floors and side walls of stucco on metal lath. The roofs are steep pitched and are surmounted in many places by weather vanes, the face of the entry ways being decorated with Mother Goose figures, such as the "Cow Jumping Over the Moon," and "Wise Old Owl," the "Old Lady Riding on a Broomstick," etc.

In the rear of the main building is located the spacious diningroom, and back of that the kitchen. Two detached buildings house the lavatories and toilets.

A complete water supply and sewerage system was installed. In addition to the shower baths there is a swimming pool with concrete bottom in a nearby stream.

Altogether there are about six thousand four hundred square feet of dormitory space, which allows over sixty square feet per person for one hundred children. Some of this space will be occupied by those in charge of the camp. The second story over the diningroom is also available for this purpose. Storage space, as well as offices and locker space, is provided.

The staff includes nurses, recreation workers, camp quartermaster



The regime requires the proper balance of exercise and rest, and the rooms permit the freest circulation of air.





This year the Camp introduced more than one hundred children—undernourished and tuberculosis exposures—to the joys of outdoor life under conditions favorable to body and mind.

and assistants, cooks and helpers. A physician for the care of the children was in attendance on certain days.

Selection of children to be sent to the camp is carefully conducted on the basis of surveys and medical records.

As the open-air schools remain open all summer, it was possible to recruit a new group for the summer camp among those who were unable to attend the open-air schools for want of space.

The homes of Detroiters whose children were sent to the camp were beehives of excitement during the month of preparation. Clothes were to be got ready and marked with tape. There was necessary a physical examination. The delicious days of anticipation of a wonderful life in the open passed usually too slowly, and beyond that there was the enticing probability of again being restored to the health balance which means usefulness and efficiency in the adult days ahead. There is much satisfaction in the feeling that a community can by the expenditure of money bring health and happiness to some of its temporarily less fortunate future citizens.

## What a Hospital Library Service May Accomplish

By CARL H. MFLAM, SECRETARY, AMERICAN LIBRARY ASSOCIATION, CHICAGO, ILLINOIS

THE other day," wrote a hospital librarian during the war, "I managed to get admitted to a ward which had been closed to me for almost a week because of the influenza epidemic. When I appeared in the doorway, the men in the nearer end of the ward gave a joint sigh of relief that came like music to my ears. Almost in a perfect chorus they exclaimed, 'Yes, here she comes! Here comes the book lady!' Farther down the ward, one lad, who was very young, greeted me with real tears in his eyes. 'I have been lying here for days wishing you would come,' he said."

Hundreds of experiences like this during the last few years have convinced librarians who have had the good fortune to serve in hospital libraries that the book finds an important and comparatively new field of service in the hospital.

### Therapeutic Value

When the war awakened public consciousness to the loneliness and suffering of the men in the hospitals, the American Library Association's librarians in the camps began the specialized work of supplying reading matter to the patients. From that beginning there was developed a reasonably complete hospital library service in the Army, Navy, and Marine Corps establishments. Later this

hospital library service—with the other library service for the military organizations—was taken over and is now being maintained by the United States Government.

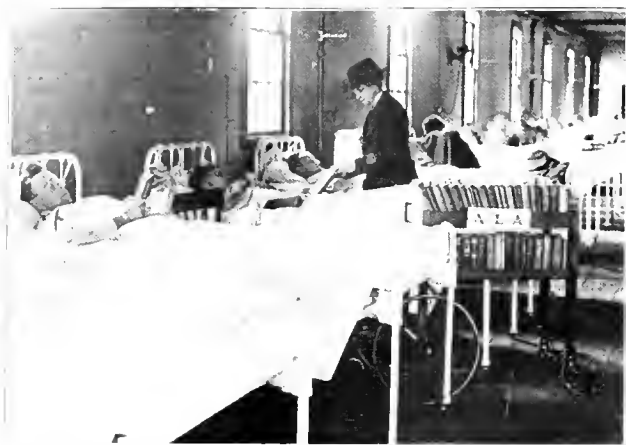
Following the Armistice the wounded men were returned to America by the thousands, and the American Library Association organized an extensive library service for the disabled men in the Public Health Service and so-called contract hospitals. The num-

ber of books in use in these hospitals was recently estimated at around fifty-five thousand. In one hospital more than 2,500 books were read in one month and the total number of books read by Public Health Service hospital patients in March was nearly twenty-two thousand.

As the result of this specialized library service in hospitals for the soldiers, sailors, and marines, and for the disabled veterans of the war,



Administration by a trained librarian is one of the most important features of hospital library service. In addition to thorough professional training the librarian must possess infinite patience, sympathy, and tact, in order to encourage reading and direct it along the most beneficial lines.



"The library is the only thing that kept me from going crazy," said one man as he was being discharged from the hospital. Thousands of American ex-service men have felt the same way about the library service provided by the American people through the American Library Association.



Some one to talk to, something to read, something to think about—that is what the hospital librarian gives to each patient in the hospital. The convalescents who are able to leave their wards may go to the hospital library, but the little tea-wagon trucks take books to those who are confined.

there has come the new realization of the importance of libraries in the lives of men and women who are temporarily or permanently confined to hospitals. Many physicians and nurses who have seen the librarians at work have testified to the high therapeutic value of the service rendered by them and their books. Convalescents especially are eager readers. Many a patient has been aroused to take a new

volumes and a few ragged magazines in every hospital—is indicated by the following paragraph quoted from Miss Miriam Carey, one of the hospital library supervisors under the American Library Association, and now in charge of institutional library work in the State of Minnesota:

What the librarian of a base hospital library aspires to do is to get everybody to reading. In order to know how to do this, a leisurely sur-

vey in the ward with a book or scrap-book or magazine in his hand

Library commissions in some of the states, public libraries in several cities and, more important than all, hospital authorities themselves, are taking a new interest in the development of this trained expert book service for the men and women in hospitals. The time may soon come when the library and librarian will be con-



The Salt Lake City Public Library is one of several such institutions which have established library service for hospitals. The convalescents are always especially glad to see the book truck coming.

interest in life because of the book he has read. Books not only help to kill time but they furnish something new to think about and something new to talk about. Many ambitious young men in the hospitals have turned the dreary hours of convalescence into hours of profit by the study of books on vocational subjects.

The specialized character of the service rendered by the hospital library of the new type—for there have always been a few scattered

vey from bed to bed is taken. After the soldiers get acquainted with the librarian and adopt her as one of their own folks, they do not hesitate to tell her what they want to read—far from it. And after one of these bedside visits she can tell them what they want to read if they are backward about it. To satisfy the wants of the sick soldiers it is necessary not only to take the book to the man, but to get acquainted with him. After this has been done the librarian and her orderly have the supremest satisfaction that can come to such workers, namely, that of seeing every man

considered as important parts of the hospital equipment and personnel as the laboratory and the head nurse.

Another feature of library service may logically be expected to grow out of this experience, viz.: the establishment and maintenance—probably by public libraries in cooperation with social service agencies—of a specialized library service for the sick, the wounded and the convalescent outside of the hospital. Although reading matter is plentiful and books



Since the need of hospital library work was demonstrated in Army and Navy hospitals, several cities and several states have sponsored such work in their civilian institutions. In Iowa, Minnesota and Nebraska systematic institutional work is under way, and all have appointed supervisors of state hospital libraries.

The daily visit of the librarian with her "book wagon" is an important element in the lives of the wards. Practically the only patients who refuse the opportunity to select some reading matter are those who exercise the privilege of ordering a book not seen on the wagon. Each man gets what he most enjoys.

are fairly cheap, still it is true that many thousands of those who are confined to their beds or to their rooms are entirely unprovided with the kind

of reading matter which they ought to have, and are quite beyond the reach of the helpful, stimulating suggestions about reading which will

make the book do its part in speeding up their recovery. New interests acquired through reading are an undoubted spur to recuperative effort.

## Physical Education Plants for Public Schools\*

### Oakland, California, Arranges Adequate Schemes for Developmental and Corrective Exercise

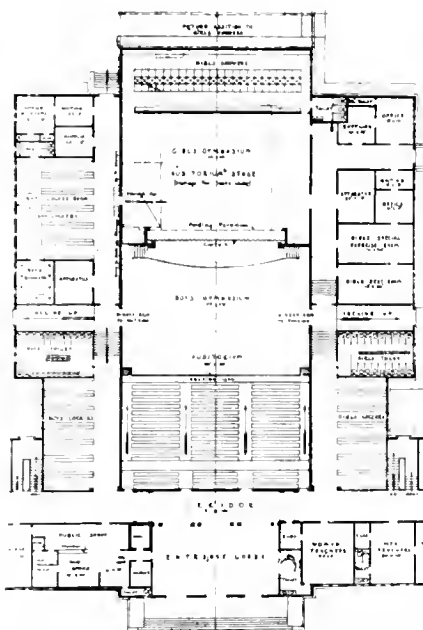
BY C. W. DICKEY, SUPERVISING ARCHITECT, OAKLAND PUBLIC SCHOOLS, OAKLAND, CALIF.

PHYSICAL education has loomed large in the planning of the new public schools of Oakland, Calif., under the recent five million dollar bond issue, partly because the school authorities believe it quite as important as for mental, but also because a state law passed about four years ago makes it mandatory upon all school districts to provide physical training for all children from the kindergarten to the twelfth grade who are physically fit to receive it.

Fortunately, our climate permits exercise in the open air throughout the year except on a few rainy days. Thus the exercise floor or gymnasium proper is not as essential as in more severe climates, and can be eliminated where economy demands. The bathing and dressing facilities and administrative offices are, however, considered essential.

#### Individual Needs Cared for

Every pupil in the school is provided with an individual steel cubicle



Combination Gymnasium-Auditorium for the Elmhurst Junior High School. The stage is used as the girls' gymnasium, and the front of the auditorium for the boys' section. This plan forms the central motive of a large school building.

locker for his gymnasium suit. On the boys' side there are sufficient full length lockers to accommodate the street clothing of one class, varying

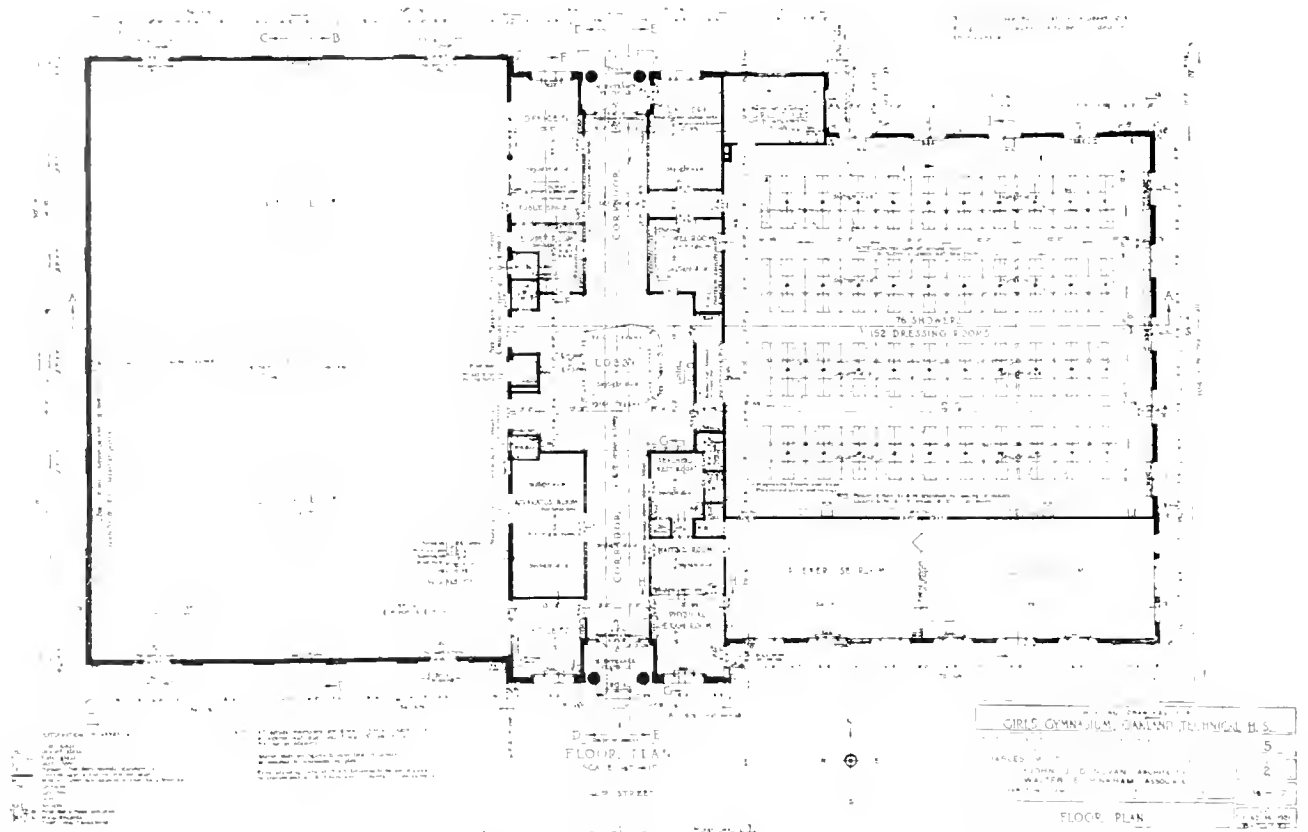
from sixty to one hundred and twenty-five in the different schools. These are used successively by each class, the bathing being in a general shower room. On the girls' side, small individual dressing booths are provided instead of long lockers. Each booth connects directly with a shower, two booths to each shower. The construction of these booths is of white enameled woodwork supported free of the floor on nickel plated legs.

The gymnasiums are generally individual buildings of wood, frame finished, with cement stucco on exterior walls, and with tile roofs. They are set between the boys' and girls' athletic fields.

The floor plan is arranged for the maximum ease of access and egress so classes will not interfere with each other, and provision is made on both boys' and girls' side for instructors' offices with shower and toilet, examination and first-aid room, supply and towel rooms, apparatus room, corrective exercise and therapeutic room. A rest room is provided for girls, with cots, tables, and chairs. Adjoining the dressing room is a toilet and, on the girls' side, a set of hair driers.

The plans of three typical gymna-

\*The plans used in connection with this article are sponsored by C. W. Dickey, supervising architect, and Washington Miller, Louis Stone, J. J. Donovan, and W. E. Pinkham, associate architects.



The girls' gymnasium of the Technical High School is designed to serve a school of 2,500 pupils. The other half when completed will be for boys and will be similar to this plan with the exception of dressing rooms and showers.

siums are shown herewith. The girls' gymnasium at the Technical High School is for a school of 2,500 pupils, and constitutes the first half of the physical education plant. The other half when completed will be for boys and similar to the girls' quarters except as to dressing rooms and showers.

The gymnasium for the Alexander Hamilton Junior High School is much less elaborate and much smaller. It provides for both boys and girls for a school of 1,200.

The combination gymnasium-auditorium for the Elmhurst Junior High School shows a still more economical scheme. The building is so planned that the stage is used as a girls' gymnasium, and the front portion of the auditorium for a boys' gymnasium. The seats back of same being raised on tiers with a balcony above. The bathing facilities and other accessories are arranged along each side of the auditorium and stage. This plant forms the central motive of a large school building. The general school locker rooms and toilets will be noted near the main corridor. In thus providing a dual use for the auditorium a great economy in construction is achieved. The seats for the gymnasium floor are stored on special

trucks under the stage. The gymnasium accessory rooms are used as stage dressing rooms.

In all cases, the gymnasiums are arranged for social uses such as dances, the offices being then used as dressing rooms. The exercise floors

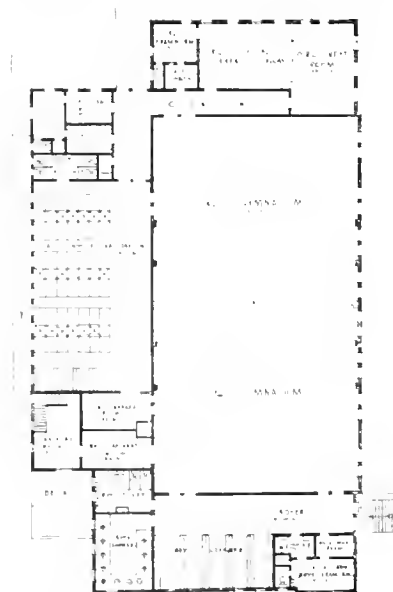
are separated by heavy patent folding door partitions so the whole space can be thrown open for these occasions.

## Argentine Installs Physical Education

*Regulations for the physical education of school children* which have just been approved by the National Council of Education, the central educational authority of Argentine, provide for special classes in physical education, for the installation of conveniently accessible playgrounds, and for the appointment of teachers for each playground. The council also ordered the appointment of a commission to draft plans for the construction of school baths.

## Oregon Survey of Feeble-Minded

A recent state-wide survey in Oregon shows that more than 75,000 men, women, and children, of a total population of 783,000, are dependents, delinquents, or feeble-minded. More than 500 school children of a total enrolled school population of 32,500 are more or less mentally deficient, according to a recent statement by the United States Health Service.



The Gymnasium of the Alexander Hamilton Junior High School, smaller and much less elaborate than the building at the Technical High, but affords ample provision for both boys and girls in a school of 1,200 pupils.

# Care for Convalescent Cardiac Children

BY MRS. BENEDICT ERSTEIN, PRESIDENT, MARY ZINN HOME FOR CONVALESCENT CHILDREN, WHITE PLAINS, N. Y.

ONE of the finest examples of enlightened private philanthropy is afforded by the Mary Zinn Home for Convalescent Children. Anxious to establish a memorial of some sort to their mother, Messrs. Martin and Arthur Zinn consulted the best equipped experts of the city before finally deciding upon the form that this memorial was to take. After considering many types of work, they finally decided to enter the field of caring for children convalescent from cardiac disease.

In the fall of 1919, an experimental home was established at Sheepshead Bay. The number of children cared for was limited and the most careful study was made of the requirements that a properly equipped building called for, the nature of service that must be afforded in order to assure the best results, the type of patient to be admitted, and the extent and nature of the after-care work that must be provided in order to assure a continuance of the good results achieved, through the treatment under supervision.

## Planned After Try-Out

After the brief experimental period, a large estate was purchased on Namarneck Road, White Plains, N. H. The main building on the property was completely remodeled so as to provide extensive porches, enclosed

rest room and sun parlor, dining room, kitchen, play room, wards, isolation room for patients confined to their beds, nurses' quarters, bath rooms, shower rooms, store rooms,

building with two class rooms. Another building was remodeled to form an isolation building, arranged in two sections so that each may be completely cut off from the other in case



Boyer

These little patients do not feel themselves greatly hampered and certainly are not unhappy under conditions that are properly adapted to their needs.

etc. The ventilation throughout is perfect. Every possible safe-guard has been taken to assure comfort, sanitary conditions, and safety.

What had been the barn was completely converted into an ideal school

of necessity, each being provided with separate modes of ingress and egress, etc.

The Home accommodates forty-two children, and, although it has been in operation for less than a year and a half the demand on its facilities far outstrips the possibilities of accommodation.

Every thought has been directed to freeing the Home from any institutional aspect. The play room is a delight to the eye with its dominant blue and yellow coloring, its cheerful draperies, and its tastefully decorated bookshelves. The dining room is equipped with small tables. The reception hall was left untouched so as to retain the effect of a residence, and in many other details every effort has been made to preserve a homelike aspect.

## Three Main Groups

The type of case upon which the stress is being placed is that technically known as the "sub-acute cardiac." With a breadth of vision not always evident in similar organization, there have been formed three directive groups of an unusual type. The Board of Directors is composed



Boyer

Alterations necessary to convert a residence into this institution for the care of convalescent children sacrificed none of the charms of a home atmosphere. The reception hall was left untouched.





What had been a barn was converted into an ideal school building containing two rooms. With these children a physical handicap does not necessarily mean retarded mental development. Boyce

almost entirely of representatives of the various social service groups connected with the hospitals of the city. The president of this Board of Directors is Mrs. Benedict Erstein, and the vice-president, Mrs. Arthur Zinn.

Men and women, for the most part distinguished by their connection with philanthropic institutions of various types, were organized into an Advisory Board, the Chairman of which is Herman Block.

A medical board, the chairman of which is Dr. Charles Gilmore Kerley, its personnel including some of the leading pediatricists and specialists in cardiac diseases, gives constant care to the admission of children and proper medical treatment, and the conditions to warrant discharge of the patient.

The home itself is under the direction of a registered trained nurse, with registered trained nurses and assistants in charge of the children. A local physician is also a member of the staff, and visits the home frequently, giving personal attention to their physical care. All the members of the Medical Board are available for consultation and for treatment of children who have been discharged from the home. A trained nurse visits the homes of the children after they leave White Plains, and directs the home treatment to assure complete recovery.

#### Demonstrates Right Method

The predominant feature of the Home is, first and foremost, the happy spirit that is everywhere prevailing. The children do not look like patients. Their eyes are bright and clear, their

cheeks are blooming and round, and the halls are continually ringing with happy laughter. The meals are carefully regulated by a trained dietitian. The education of the children is under the direction of the Department of Education of the City of New York, which has assigned two teachers to the work, and which provides also for one of the teachers to remain in charge of afternoon recreation. The attending and admitting physician is at the home more or less frequently, at least once a week, in addition to which there are the occasional visits of the other members of the Medical Board and the constant visiting of the local practitioner.

The social value of this work is immeasurable. That it fills a gap in the general plan of social medical activity, cannot be questioned. What may be of even more importance than the restoration to health of the children who are cared for at the home, is the possibility that this home may demonstrate the proper method of convalescent care for children afflicted with cardiac disease. The interest which the project has aroused in the community speaks well for its fulfillment of a real need. The spirit of the donors is reflected everywhere; a spirit not of self-glorification, but of a whole-hearted desire to serve children.

#### Directors for Food Research Institute

The Carnegie Corporation of New York has announced that the election of directors of the Food Research Institute, which began work at Stanford University on July 1, under an agreement between the university and Carnegie Corporation, had been completed. In addition to Dr. C. L. Alsberg, who has been chief of the Bureau of Chemistry, United States Department of Agriculture, the board will comprise Dr. Alonzo E. Taylor and Professor Joseph S. Davis, now Assistant Professor of Economics at Harvard.

The National University of Mexico is organizing school lunches for poor children. University teachers and employees will voluntarily contribute a small percentage of their salaries for this purpose.



All plumbing has been remodeled according to the most up-to-date sanitary standards. This view gives a good idea of one of the model lavatories. Boyce



# Control of Infectious Diseases in Hotels

By D. L. RICHARDSON, M.D., SUPERINTENDENT, PROVIDENCE CITY HOSPITAL, PROVIDENCE, R. I.

THE number of people who patronize hotels every year cannot be estimated with any degree of accuracy, but it is certainly very large. As a factor in the spread of contagious disease they certainly must be of considerable importance, although of course there is difficulty in tracing infection to this source because the populace is so transient. Whether a disease is contracted in any particular hotel is very difficult to determine, for the person may have visited several during the incubation period.

That vermin, particularly bedbugs, are a source of much discomfort, if not danger, anyone can testify who has patronized the cheaper hostelrys particularly. The modern up-to-date hotels take great pains to attain cleanliness of their premises because it pays, and in them one is almost as safe as in one's home. There are a few criticisms which should be offered as applying to the best of them, and worst ones need severe censure.

## Health Protection Necessary

The suggestions made apply equally to restaurants, boarding houses and apartment houses. Managers of such places of temporary abode owe it to themselves and the public at large to safeguard the patrons that are within their doors. The time has come when they cannot afford to neglect such an important matter. It is not necessary that construction and equipment be elaborate and expensive, for any well built wooden hotel, if under good management, can furnish as good sanitation and protection to its guests as the largest and most elaborate hostelrys.

The possible sources of infectious diseases in such establishments are the employees—particularly those who handle food and drink—the water, milk, ice, and ice-cream, canned goods, and other foods which are sometimes infected, and by contact through such common utensils as the lavatory, soap, common comb and hair brushes, and contact with guests who are sick with infectious disease while resident there.

The more common diseases which may be contracted are typhoid fever, food poisoning, including infectious diseases caused by certain intestinal germs, respiratory infections, scarlet fever, diphtheria, etc.

It is highly important that every

*More thought is given by the traveling public to convenience and to luxurious background in hostelrys than to their potentialities for harm unless some fortuitous circumstance drives home a sense of the ever present menace of contagion. From the wisdom of experience, however, hotel men are learning that only eternal vigilance assures safety and are requiring that their installations in kitchen, laundry, refrigerating rooms and bathrooms shall embody the best principles of sanitation. The physical examination of employees and routine sanitary practices take care of the rest. Neglect in such matters should not be tolerated anywhere by the traveling public.*

hotel have a doctor employed part time, or full time, depending on its size. The hotel manager should call him to see all sick employees, or at least ascertain what disease takes them from their work, and the doctor should always be consulted before an employee who has been sick goes back to work. If the manager believes that a patron is sick with some infectious disease, the hotel physician should be instructed to find this out by personal examination, or from the patron's own physician. A hotel is no place for acutely sick persons, nor should persons suffering from tuberculosis or venereal diseases be allowed more than transient accommodation. The supervision of the health of the employees is of very great importance. Many cities now require that all persons who handle food and drink be licensed after a proper physical examination. This is a very good practice, but the value of an examination once or twice a year is limited because employees are often sick between times. The periodic examination rules out largely persons suffering from tuberculosis, venereal diseases, some chronic skin conditions, and also typhoid carriers. It is highly important, then, that every employee taken acutely ill be seen promptly by the house physician. It is a wise provision to take every acutely ill employee away from work, especially if he is a waiter or kitchen

employee. Surely every person with intestinal symptoms suggesting typhoid, or persons with sore throats suggesting scarlet fever, diphtheria, and the like should be excluded until well, or non-infectious. The potential danger of a typhoid carrier or mild typhoid case in the kitchen or dining room is never to be forgotten. The employer should insist on a health certificate of every employee handling food and drink and insist that the hotel doctor see at least once every acutely sick employee. If the employee has gone to another doctor, the hotel physician can secure the diagnosis from him.

Every patron sick with an acute infectious disease should be removed to a hospital at once. The hotel manager cannot afford to disregard this principle, because if it proves to be a case of smallpox, or other highly infectious disease and, either if publicity be given it or an outbreak is actually started, the hotel's reputation will suffer severely.

In towns and cities where there are no hospitals it may be necessary that the sick person be treated in the hotel. The hotel physician should certainly have the supervision of every such case, with or without the help of another physician. He should be responsible for the prevention of other hotel guests becoming infected. The sick person should be strictly confined to his room and visitors restricted as much as possible. The technic to be employed should be that employed in the ordinary home.

## Effective Isolation

There should be some card on the person's door to indicate to other guests to keep out of the room.

No one except the doctor, nurse or attendant, and nearest relatives should be allowed to enter the room.

The patient should be in a room connecting with a private bath, or at least there should be a lavatory. In the bathroom should be provided a scrub brush for the hands, preferably liquid soap, paper towels or small individual hand towels, with a receptacle into which to throw them after use. If an antiseptic solution is to be used, a basin should be provided in which can be made a solution of sulpho naphthol, a teaspoonful to the quart. The hands should always first be scrubbed with soap and water for

not less than three minutes before the use of the antiseptic solution and the immersion of the hands in the antiseptic solution should not be for less than one minute.

The doorknob on the side of the door facing the corridor should never be handled by those attending the patient until their hands are scrubbed.

The doctor nurse or other attendants and visitors as well should, while in the room, wear a washable outer garment, which garment should be left in the patient's room or bathroom when such persons leave the room, after scrubbing their hands.

The relatives and visitors must not be allowed to kiss the patient.

The eating utensils which necessarily must come from the hotel kitchen should receive careful attention, otherwise many of the guests might be infected by a single mistake. As few dishes as possible should be exchanged between the patient's room and the kitchen by leaving in the room all which do not need to be washed at every meal, or by the use of paper utensils which can be put in the waste and later burned. In the kitchen there should be a kettle or pan of water on the stove sufficiently large to accommodate all the dishes which will be returned from the patient's room. In large hotels which have steamers, one of these can be used for sterilizing the dishes. The person designated to get the dishes from the patient's room must not go in the room, but is to receive them on a tray and with them proceed to the kitchen without opening doors, asking someone else to open any closed door. These dishes, tray and all, should be put into the pan or steamer directly, the person's hands should be scrubbed at once. The dishes should be boiled or steamed for at least ten minutes.

The food should be delivered to the patient on the tray by the porter and he should not enter the room, but hand the tray to the attendant at the door.

Soiled linen can be allowed to collect in the room or bathroom, either being put in a bag or tied up in a sheet and put out of the way. Soiled baby napkins or other grossly soiled linen can first be washed out in the toilet bowl. When it is to be sent to be washed it should be put in a clean bag or sheet and carefully tied up. After delivery to the hotel or private laundry, it should be put in water about boiling point for at least twenty minutes. This can easily be done in a laundry washer by using water near the boiling point while the

washing process is going on. The water used for this purpose in commercial laundries is usually much less than boiling. This process will render the patient's linen harmless.

All waste should be collected in a large paper bag and taken to the furnace room where it should be burned.

### Disinfection of Premises

After recovery or after a patient has been removed to the hospital, the room should be treated as follows: The dishes, linen and waste should be treated as has already been indicated. All the utensils and toilet articles possible should be boiled for at least ten minutes. Those articles which would be injured by boiling like money, nice brushes, shoes and other leather goods, etc., should be washed with soap and be allowed to dry in the sun if possible. The room itself is a slight source of infection. The mattress and pillows should be sterilized by steam or exposed to the sun and air for at least six hours. The bed, bureau, table telephone instrument, and other furniture should be washed with soap and water. Upholstered furniture, draperies, etc., can be aired in the sun. If the room has a hardwood or other washable floor, it should be washed with soap and water, as well as the floor and fixtures in the bath room. The woodwork about the door, including knobs and other wood finish, may be treated in the same way. After the room has been opened up to the air for at least twenty-four to forty-eight hours it is safe for occupancy. If antiseptic solution is to be used for cleaning purposes sulpho-naphthol, a teaspoonful to the quart, is cheap and does no damage.

There are certain features of the general management and equipment of a hotel that have a distinct bearing upon the transmission of diseases.

No hotel should allow the presence of vermin. Lice are known to be carriers of diseases. Bedbugs, although not known to be carriers of disease, are very troublesome and annoying. The dormitories should be well supervised and guests should be encouraged to report at once any vermin found. Bedbugs do not have the same favorable hiding places in the modern hotel as in the cheaper wooden structures, but they may be found even in the one ever so well built. The dormitory maids should be told to watch constantly for vermin and report to their superiors.

Roaches should receive attention. Food attracts them and it should not

be left about. Their breeding places may be sought out and treated successfully by many of the commercial powders and sprays. Two good formulas are as follows:

#### *Liquid Bug Spray*

Cresol ..... 1½ pints  
Oil cedar leaf..... 1½ pints  
Naphthalene ..... 1 pound  
Kerosene to make 5 gallons.

Dissolve cresol, oil and naphthalene in kerosene and add enough kerosene to make 5 gallons.

#### *A Powder*

Sodium fluorid ..... 10 pounds  
Borax ..... 5 pounds  
Pyrethrum powder ..... 5 pounds  
Flour ..... 25 pounds

The premises should be kept free from rats by the use of cats, poisoning, trapping, or by ratproof construction, and not having uncovered garbage about.

It would be highly desirable if each lavatory be so constructed that the water could be turned on by some other method than by soiled hands, such as a forearm or foot lever, and the washing of the face and hands be done in warm water which comes from a spray or spout to which is piped both hot and cold water, the mixture to be governed by the valves on each hot and cold water supply. Perhaps such a practice will come about in time. Certainly after washing no one should be allowed to wipe on a towel which has been previously used. Individual cloth towels should be provided, or else paper towels should be supplied.

Soap should be liquid soap, dispensed in individual cakes or in liquid soap containers, many of which are on the market.

No common drinking glasses should be allowed. Either drinking fountains or paper cups should be supplied. The common hair brush and comb should not be encouraged.

### Dish Washing Methods

It is not probable that soiled dishes from the dining rooms are a very fertile source of disease, yet they probably are a factor. In the small hotels these dishes after being swilled should be washed in hot water and scalded before wiping. The wash water should be changed frequently. A very efficient method of sterilizing dishes in a larger establishment is the use of the mechanical dish washer, many types of which are on the market. The essential point being that the boiling water be used in the process.

No common towels should be tolerated in a kitchen. Each cook

should have his own towel, preferably hitched to the uniform in some way. Besides individual towels, only individual cloth or paper towels should be used.

Cooks should never taste and put the spoon back into the food again. In every respect the kitchen should be scrupulously clean.

The selection of the raw food is of importance in certain respects.

The raw milk supply should be vouched for by the Board of Health, but the manager should watch closely the bacterial count for this is an ex-

cellent indicator of the cleanliness in the preparation of and also of the age of the milk.

The water supply of public hostilities in small places where there is no safe public supply is of much importance. The drinking water should come from artesian wells or from a surface well which is so situated that there is no liability of infection from human excreta. The approval of the water supply should be obtained from the state or local Board of Health.

Oysters and other shellfish should be purchased from reliable sources.

Canned goods and olives may be the source of infection. No swelled cans should ever be used and, if there are many in a single order, all should be condemned. Ripe olives have recently been the source of serious outbreaks, but the United States Government has taken steps to see that in their preparation at the factory the germs are killed.

It is a good business proposition for any hotel, restaurant, or rooming house to see that such measures be instituted and carried out for the protection of their patrons.

## The Infant Welfare Society of Chicago

Child Welfare Is a Study in Applied Economics.  
It Is Both Humanitarianism and Common Sense.

BY LUCIUS TETER, PRESIDENT, THE INFANT WELFARE SOCIETY OF CHICAGO, CHICAGO, ILLINOIS

THE Infant Welfare Society as a corporation came into existence in 1911 as the outgrowth of the Chicago Milk Commission which, with other groups, had been laboring with the problem of getting a better milk on the market, encouraging institutions caring for children to use a better grade of milk, and providing babies in the poorer districts with a clean, pure modified milk during the hot summer months.

Endorsement of dairies making an honest effort to produce better milk, and legislation against careless producers brought about an improvement in the milk supply. Demands made on institutions induced them to buy better milk.

A central milk depot was established where milk was brought, pasteurized, modified and then sent to a few outlying distributing points. Here mothers came and were supplied with the required number of bottles of the required milk content for their babies. Mothers knowing not the rudiments of proper care of ordinary foods had no background for so keeping the milk that it was fit for the child's consumption a few hours after delivery during the extreme heat of the summer months.

However there is no gainsaying the advantage there was to some infants who were thus supplied and it was equally obvious that the problem was not a problem of the summer months alone but was a tremendous situation which needed constant thought throughout the year. An effort was successfully put forth to raise funds

making it possible to consider a twelve month program.

### The Scope Extended

In the development of a twelve month program the accepted standards of an infant welfare program were striven for and success was early manifest. A corps of doctors and nurses was developed for consultation at stations and the consequent follow-up work in the homes. As an initial program but one such conference was held each week. Because the organization had done its first work as a milk distributing agency this phase of the work was not

easily disassociated from the wider program of prevention through education. For a number of years much milk relief was given, but the present policy is that milk, or any material relief, is given only over such a period of time as is necessary to get a relief giving agency in on the case. This policy has made it perfectly clear to the mother that the Society offers her nothing but a well baby as an inducement for placing the child under supervision. Endless streams of mothers might be persuaded to bring a baby to conference religiously were they to receive a never ending supply of milk for their effort, entirely los-



Expert knowledge on such questions as feeding and the prevention of minor ailments is passed on to the mothers. The work is permanent and valuable only in the degree that the mothers are reached on the educational side.

ing sight of the educational value which would make it possible for her to care for her own. Cases have been cited where the milk was shared with other members of families in which the mother had not learned the value of it as the next best food for her baby.

In the early years of the work the question was again raised as to whether or not it was being made too easy for mothers to discontinue breast feeding and to put the baby on an artificial food. This danger was entirely wiped out with the inauguration of weekly conferences with the mother. The technic of breast feeding was emphasized and the teachings reiterated again and again. An early effort was made to discourage the mother from expecting an issue of milk tickets as a reward of merit for having brought her baby to the conference. That the Organization was entirely justified in taking such a stand was clearly brought out in a survey recently made when there was much discussion concerning the price of milk and the battle of the increase in cost being fought by the babies rather than other members of the family. Despite the increased cost of the milk, it was found that mothers who had consistently supplied the smallest member of the family with his milk ration continued to do so. This was among mothers who had learned the value of milk as a food for the child through contact with the Infant Welfare Society and not among mothers who had had no contact of the sort.



The Infant Welfare Nurses carry instruction in milk modification into the home. The doctor indicates the formula and the nurse carries out his instruction in the home.



Side by side with the untrained mother, the trained worker notes the child's progress, weighs it and interprets the signs. Methods are adapted to the means at hand. The problem of the child extends itself to the problems of the parent as concerned with the child.

The aim of the Society is, to reduce the infant death rate and to improve the health of the coming generation—before birth, by caring for the mother and after its birth by teaching the mother how to feed and care for the infant.

Because the Society relies on the contributions of interested friends and socially minded citizens, who believe that not until we have made health education available to every living soul will we have a physically sound community, a very definite piece of work was undertaken as a demonstration. Such a demonstration has proved the value of the undertaking and such standards have been set up as have made forever impossible work less well done.

In 1911 with ten stations and ten nurses the death rate was 4.3 per cent as against a rate of 1.5 per cent in 1920 among the babies registered in the twenty-four Infant Welfare stations.

The name "District" is given to the territory not more than a mile square, covered by any one working unit of the Society. In these areas where the infant death rate has been highest districts have been organized. Definite boundaries have been established to prevent any overlapping of effort, to make all the work readily accessible to the mother, and to make it possible for the nurse to cover the territory in her home visits.

The "Station" is the centrally located meeting place to which mothers may bring their babies twice a week. The stations are located in the field houses of ten public parks, two nurseries, two social settlement houses, two dispensaries, and eleven are in buildings which it has been

necessary to rent because of the lack of other facilities. The plan has been to use whatever facilities were available and known to the mothers in the district. In this manner very close cooperation is possible between all agencies dealing with the problems of the district.

The term "Conference" is given to the semi-weekly meeting of the mothers who come to the station for the advice of the doctor.

### The Work Is Educative

The work is done through specialized service. Mothers bring their babies to an Infant Welfare conference and there any mother living within the stated boundaries of the district is accepted. Only such history is taken as makes it possible for the nurse to locate the family the next day. The child is undressed, weighed—by volunteer workers when available—and then seen by the doctor. The doctor gives the baby a very thorough physical examination and advises the mother regarding the care of her child. Emphasis is placed first and always on the value of breast feeding. When a modification is necessary the doctor indicates the formula and the nurse carries out his instruction in the home. Stations are not dispensaries in any sense of the word as advice only is given. On this score and with such a program only the Society has had the cooperation of the medical fraternity.

Being cognizant of the tremendous existing need of preventive work with all children, it was after much deliberation that the age limit of two years was set. The generally known facts concerning the death rate over this early period coupled with the



*The two best reasons for serving Jell-O in the industrial cafeteria:*

1. Workers want it.
2. It's good for them.

*Watch them go for this*

### **JELL-O Pineapple Whip**

One Special Package Lemon Jell-O; 2 cans shredded pineapple; 2 quarts boiling water.

Dissolve the Jell-O in the boiling water. Drain the juice from the two cans of pineapple, add enough water to make two quarts and add to the dissolved Jell-O. When cool and still liquid, whip according to directions on package. Stir the pineapple into the whipped Jell-O when it is thick enough only to drop—not run—from the spoon. Set away to harden. Serves from 90 to 100 persons at a cost of three cents per serving.

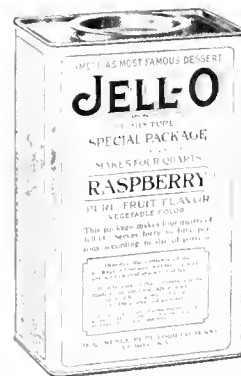
So many relishes and desserts are lacking in proper food value and so many foods of high nutritive qualities are untempting to the eye and palate, that it is apparent that any food which combines tempting appearance, delightful taste and a tendency to renew bodily tissue must be of exceptional value to the industrial worker.

Jell-O is far more than a "pretty" dessert. It possesses very valuable properties that aid in the upbuilding of the system, and is especially beneficial to those who are emaciated or exhausted. It exercises a marked influence on the economy of metabolism.

The ease with which so many delicious salads and desserts may be prepared with the use of Jell-O is one other factor that recommends this wholesome preparation to the industrial cafeteria manager.

A Jell-O treat will add to the satisfaction of the lunch period and help renew employees for the coming hours of labor. Workers want it. It's good for them.

Six pure fruit flavors: Strawberry, Raspberry, Lemon, Orange, Cherry, Chocolate. The new special package for institutional and restaurant use contains enough Jell-O to make four quarts of jelly.



Gallon Package

## **THE GENESEE PURE FOOD COMPANY**

LeRoy, N. Y., and Bridgeburg, Ont.



The babies who are born must have a fair chance to survive and, having survived, must be given such health supervision as will make it possible for them to develop into adults sound in health, sound intellectually, and sound morally.

equally well known limitations of the finances of the organization made the program acceptable despite the fact that economically it was very hard to keep a child well until he was two years of age and then do nothing with him until he came up for school inspection. Such limitations as to age rendered it possible to make a very clean cut demonstration, and the re-

sults brought the confidence of citizens generally so that when an extended program was undertaken funds were made available

#### Develops Obstetric Service

Despite every effort made only those babies were reached who had survived the terrific hazards of the first month of life. A program which

carried education and care to the woman in the early months of pregnancy was the only solution to the problem. In developing this obstetric service the Society has had the co-operation of Rush and Northwestern Medical colleges through whom only has the work been possible. Weekly prenatal clinics are held in five stations, and follow up home work is done by nurses of the Infant Welfare staff.

With the stimulus given by Children's Year to the complete story of child health it was possible to develop a long planned program with the child from two to six years. For years beautiful specimens of babyhood were graduated from Infant Welfare stations at the age of two years and took their unobserved, unsupervised place in the ranks of the uncared for runabout.

In twelve stations nutrition clinics have been established and there with the help of a staff of dietitians the two-year-old is carried and his mother guided and helped in making food provision for her family.

Thus thousands of Chicago and suburban citizens are making it possible for some eleven thousand other families to share the blessings of health education.

## Scouting and the Nation's Health

### Physical and Moral Fiber is a Sine Qua Non of Boy Scout Training

BY G. SHERMAN RIPLEY, SCOUT EXECUTIVE, HARTFORD, CONN.

UNCLE SAM began to sit up and take notice when the army medical examiners rejected for active service 35 per cent of drafted men. What was the matter with the health of the average American? If he was ineligible to serve as a soldier, how desirable was he as a citizen?

Attention was directed to the physical training which the boys of the nation were receiving. The search-

light was played pretty thoroughly on the public schools, and their program for developing the youngsters was frankly discussed. It was found that a surprisingly large number of school children received no physical education, while in many cases the training was perfunctory and superficial. Too often it was unaccompanied by instruction in hygiene and physiology.

It is not really the fault of the schools that the average youngster nowadays knows more about the parts and functions of a Ford than he does about the organs of his own body. The trouble is, there seems to have been no nation-wide and definite program of physical education. Steps are being taken to define and carry out such a national program in the near future.

But no matter how well such a plan

may be organized, the public school system will need help. The school only has a boy a few hours of the day, and all school training must be along compulsory lines. Here is where an important ally of the schools begins to function. This ally is the Boy Scouts of America, chartered by Congress, and headed by Warren G. Harding as Honorary President.

There is nothing compulsory about



"Dan Beard," one of the daddies of Scouting.



Blind Boy Scouts at Hartford, Conn.



# Sherman's Polyvalent Vaccines

A more adequate and rapid immunity can be established with polyvalent vaccines than from an infection itself. SHERMAN'S POLYVALENT VACCINES rapidly stimulate the metabolism and defense of the body with a resultant prompt recovery in general acute infections.

Given early, bacterial vaccines almost invariably cut short the common pyogenic infections of the skin, mucosa joints and tissues;

Administered in advanced cases, they usually ameliorate or abbreviate the course of the disease;

Even when used as a last desperate expedient, they often reverse unfavorable prognosis.

The immunizing powers of stock vaccines are demonstrated by the prophylactic efficiency of typhoid vaccine. Bacterins made from selected, vigorous organisms are far higher immuno-producers than autovaccines prepared from feeble, degenerated organisms sometimes found in the patient's own specimens. Especially in acute cases, the PROMPT injection of a stock bacterin is decidedly preferable to the DELAYED injection of an autogenous one. The place for autovaccines is in chronic infections which fail to clear up under stock bacterins due to the prob-

able presence of some unusual bacterium.

Advanced inflammatory processes due to only one class of bacteria are rare, mixed infections being the rule. Therefore, COMBINED VACCINES, containing all strains likely to be present, give the best assurances of success; an unneeded variety of the bacterin is harmless and in no way weakens therapeutic response.

Thus the favorite invaders of the nose and throat are the pneumococcus, the streptococcus, the staphylococcus and the micrococcus catarrhalis, calling for Sherman's No. 40, and in chronic cases—when there is a foul odor produced by the Friedlander bacillus—Sherman's No. 36. In visceral infections, due chiefly to the colon bacillus with the pus cocci, Sherman's No. 35 is appropriate. In Neisser infections, if these organisms are not already allied with the gonococcus, the imminence of their entrance is so great that the rational combination is Sherman's No. 49.

When, particularly in grave cases, valuable time may be lost in securing the variety of vaccine especially recommended, it is always advisable to use the vaccine at hand which contains the predominant organism of the disease to be combatted.

## Sherman's 10 Mil Container

This package has many superior features which assure asepsis, prevent leakage and facilitate the removal of contents. It is constructed on the well known Sherman principle.

The vial is amply strong which prevents breakage so frequent with shell vials.

We are exclusive and pioneer producers of Bacterial Vaccines. Originators of the aseptic bulk package. Pioneer in elucidation, experimentation and clinical demonstration.



*Twenty Preparations.*

*Beyond the experimental stage.*

## BACTERIOLOGICAL LABORATORIES OF G. H. SHERMAN, M. D.

DETROIT, U. S. A.

**"DAILY USERS OF VACCINES USE SHERMAN'S"**



Clean-up inspection. A Boy Scout reporting on conditions found in a dirty yard. The report goes to the health and fire departments.

the physical education of Scouting. Although the training is wholly voluntary, this movement is one of the most helpful agencies for training America's boyhood into better health. On May 26, 1921 there were 407,824 registered Scouts in the United States. These were organized into 17,524 troops under the guidance of 120,000 men, all volunteers.

During its first decade Scouting has given more than 1,500,000 boys a training in ethics, hygiene and the value of camping in the open.

Scouting recognizes the fact that physical education is a great deal more than merely taking setting-up exercises. Hundreds of scout games and scout requirements which the boys pass in taking tests are aimed at genuine health education. Among the subjects of this nature, which take boys into the out-of-doors are: agriculture, athletics, bird study, botany, camping, conservation, cycling, first aid, forestry, gardening, hiking, horsemanship, life saving, personal health, physical development, pioneering, public health, seamanship, surveying and swimming.

Do the boys take these tests? Are they thorough enough to be of real value? To date the khaki-clad youngsters have taken some of the more valuable tests at the following rates: Athletics, 6,693; camping, 8,378; cycling, 7,623; first aid, 4,937; life saving, 8,781; personal health, 21,404; physical development, 3,660; pioneering, 5,251; public health, 20,691; swimming, 18,773.

There are more than sixty of these merit badges. When a boy wins

twenty-one of them (certain special ones included), he is an Eagle Scout, and may throw out his chest. The American Eagle has more than 2,500 of these Eagle Scouts under its wings.

In contrast with putting the arms up and charging forward with the left and right foot alternately (a good exercise—I use it myself), will the friendly reader put himself in the place of the Scout who is expected to pass the following:

### Public Health

To obtain a merit badge for Public Health, a scout must:

(1) State the chief causes and modes of transmission of each of the following diseases: tuberculosis, typhoid, malaria.

(2) Draw a diagram showing how the house-fly carries disease.

(3) Tell what should be done to a house which has been occupied by a person who has had a contagious disease.

(4) Describe the method used in his community in disposing of garbage.

(5) Tell how a city should protect its milk, meat, and exposed foods. State what are the laws in his community covering this subject, and to what extent they are being enforced.

(6) Tell how to plan the sanitary care of a camp.

(7) State the reason why school children should undergo a medical examination.

(8) Tell how he may cooperate with health authorities in preventing disease.

(9) Produce satisfactory evidence

that he has rendered service in some effort recommended by the public health authorities in the interest of public health.

### Physical Development

To obtain a merit badge for Physical Development, a scout must:

(1) Produce satisfactory evidence of habitual good posture.

(2) Have no remediable physical defects uncorrected.

(3) Produce satisfactory evidence of daily practice of hygienic habits and a thorough knowledge of a standard book on hygiene.

(4) Pass three of the tests, according to his weight, in the Athletic Schedule.

(5) Demonstrate proper form in running, high jump, hurdle, and shot-put.

(6) Make up a daily drill of ten exercises for scouts, giving proper exercise for whole body; present evidence of having practised this daily for six months and having taught the same to two or more boys for a period of three months.

(7) Demonstrate reasonable efficiency in two outdoor games requiring physical development; give evidence of having taught at least ten scout games to a group of boys, and know ten more.

To obtain a merit badge for Life Saving, a scout must:

(1) Go down from the surface of the water at least seven feet deep and bring up an object twelve inches or more in diameter, weighing not less than ten pounds.

(2) Swim twenty yards carrying a person of his own weight: (a) By a two-hand carry, using feet only for propulsion; (b) By a one-arm carry, using side stroke.

(3) Dressed in trousers, coat, and shoes swim fifty yards, then undress before touching shore.

(4) In deep water, demonstrate three approved methods of releasing death grip.

(5) Demonstrate Schaefer (prone pressure) method of resuscitation.

There is nothing like this in the average school curriculum. Observe that there is as much "do" as "know" in these tests.

But what is more important, the scout code of ethics is a positive factor in character formation.

Every scout must promise:

"On my honor I will do my best—

(1) To do my duty to God and my country, and to obey the scout law;

(2) To help other people at all times;

## Cantilever Stores

Akron—11 Orpheum Arcade  
 Ashbury Park—Best Shoe Co  
 Asheville—Anthony Bros  
 Atlanta—Carlton Shoe & Clo. Co  
 Austin—Carl H. Mueller  
 Baltimore—325 No. Charles St  
 Battle Creek—Bahlman's Bootery  
 Birmingham—219 No. 19th St  
 Boston—Jordan Marsh Co  
 Bridgeport—W. K. Moran  
 Brooklyn—414 Fulton St  
 Buffalo—639 Main St  
 Butte—Hubert Shoe Co  
 Charleston—J. F. Condon & Sons  
 Chicago—30 E. Randolph St  
 Cincinnati—The McAlpin Co  
 Cleveland—Granger-Powers Co  
 Colorado Springs—McEntire's, 10 N. Tejon St  
 Columbus, Miss.—Simon Loeb's  
 Columbus, O.—The Union  
 Dallas—Leon Kalish Shoe Co  
 Dayton—The Rike-Kunier Co  
 Denver—A. T. Lewis & Son  
 Des Moines—W. L. White Shoe Co  
 Detroit—T. I. Jackson, 41 E. Adams St  
 Elizabeth—Gig's, 1053 Elizabeth Av  
 Elmira—C. W. O'Shea  
 El Paso—Popular D. G. Co  
 Erie—Weschler Co  
 Grand Rapids—Herpolzheimer Co  
 Greenville, S. C.—Pollocks  
 Harrisburg—Orner's Boot Shop  
 Hartford—85 Pratt St  
 Houston—Claxton's, 802 Main St  
 Huntington, W. Va.—McMahon-Field  
 Indianapolis—L. S. Ayres & Co  
 Jacksonville—Golden's Bootery  
 Kansas City, Kan.—Nelson Shoe Co  
 Kansas City, Mo.—Jones Store Co  
 Knoxville—Spence Shoe Co  
 Lancaster—Frey's, 3 E. King St  
 Lincoln—Mayer Bros. Co  
 Los Angeles—505 New Pantages Bldg  
 Louisville—Boston Shoe Co  
 Mason—The Dannenberg Co  
 Meridian—Wimmer, Klein & Co  
 Milwaukee—Brouwer Shoe Co  
 Minneapolis—21 Eighth St. South  
 Missoula—Missoula Merc. Co  
 Mobile—Level Best Shoe Store  
 Montgomery—Campbell Shoe Co  
 Morristown—G. W. Melick  
 Muncie—Miller's, 311 So. Walnut St  
 Nashville—J. A. Meadors & Sons  
 Newark—Aeolian Hall (2nd floor)  
 New Haven—153 Court St  
 New York—22 W. 39th St  
 Omaha—1708 Howard St  
 Philadelphia—1300 Walnut St  
 Pittsburgh—The Rosenbaum Co  
 Plainfield—M. C. Van Arsdale  
 Portland, Me.—Palmer Shoe Co  
 Portland, Ore.—353 Abler St  
 Providence—The Boston Store  
 Reading—S. S. Schermer  
 Richmond, Va.—S. Syde, 11 W. Broad  
 Rochester—148 East Av.  
 Rockford—D. J. Stewart & Co  
 Salt Lake City—Walker Bros. Co  
 Santa Barbara—Smith's Bootery  
 Savannah—Globe Shoe Co.  
 Schenectady—Patton & Hall  
 Seattle—Baxter & Baxter  
 Sioux City—Pelletier Co  
 South Bend—Ellsworth Store  
 Spokane—The Crescent  
 Springfield, Mass.—Forbes & Wallace  
 Stamford—L. Spelke & Son  
 Syracuse—136 S. Salina St  
 Tacoma—303 Fidelity Bldg  
 Tampa—Glenn's, 507 Franklin St.  
 Terre Haute—Otto C. Hornung  
 Toledo—Lasalle & Koch Co  
 Trenton—H. M. Voorhes & Bro.  
 Tulsa—Lyon Shoe Store  
 Vancouver—Hudson's Bay Co  
 Walla Walla—Gardner & Co  
 Washington—1319 F Street  
 Wichita—Rorabaugh D. G. Co  
 Worcester—J. C. MacInnes Co  
 Yakima—Kohls Shoe Co.  
 Yonkers—Louis Klein, 22 Main St  
 York—The Bon Ton  
 Youngstown—R. McMann Co.



## Not Only Her Poor Feet

The inefficiency of high heels and narrow, pinched toes is greater than most women believe. Ill-balanced shoes do more than discomfort the feet; they cause fallen arches, backaches, nervous strain, displacement of the internal organs, weariness, depression.

"Working women are the worst offenders," says Dr. Evangeline W. Young, of Boston. "It is the girls who are on their feet most who persist in wearing the highest heels. Sensible women have learned that they can increase their efficiency and even earn bigger salaries by wearing shoes built for solid comfort and health."

Without sacrifice of good looks, the Cantilever Shoe for women gives perfect comfort and perfect carriage. The last conforms to

the mould of the foot, with room for the toes, and with trim fit and support about the instep and heel. The outline of the sole and the set of the heel are designed to preserve the balance and the beauty of a NATURAL walk.

The flexible shank yields with every movement of the muscles. Instead of being bound to a rigid sole which retards the circulation and makes the foot weak, in Cantilevers the foot has liberty to exercise and bend freely and gracefully. This freedom of movement strengthens the muscles and prevents and corrects flat foot. By clinging to proper shoes almost any woman can do more efficient work, avoid fatigue and accidents, and find greater happiness.

# Cantilever Shoe for Men & Women





What's a mere signal tower to a bunch of husky scouts?

(3) To keep myself physically strong, mentally awake and morally straight."

#### A Scout Is Clean

He keeps clean in body and thought, stands for clean speech, clean sport, clean habits, and travels with a clean crowd.

This extract from the Scout Oath and the Scout Law gives a boy a solid moral foundation upon which to stand. The venereal disease clinics

will have less work when all the boys in America have built these principles into their lives, starting at the impressionable age of twelve, when boys need the guidance of a moral rudder set true.

The author once heard Dr. Frank Crane say, "We are getting to be a nation of indoor people. We never go out of doors—except to go from one house to another!" Here, again, is where Scouting comes to the aid of the schools. School physical work

is largely an indoor game. Scouting is an outdoors game. Every first class Scout must swim fifty yards and take a fourteen mile hike. During 1920 160,000 boys went camping under Scout auspices. This year the number was larger. These thousands of boys are learning to use God's out-of-doors.

Scouting is breeding a generation of men who think of recreation in terms of the blue sky, and not the movies.

## Short Tenure of Women's Jobs

THE Bureau of Women in Industry of the New York State Department of Labor has been attempting to find out to what extent this statement so commonly made by employers is true. Eighty of the largest firms in New York State were questioned. These establishments employed 14,597 men and 14,435 women. Included in the list are manufacturers of chemicals, rubber, shoes, textiles, soap, optical instruments, paper boxes, cut glass and candy.

While the turnover among women is higher than among men, the difference is not great. The significant fact is that where turnover is high among men, it is also high among women and where it is low among men, it is also low among women, which in the final analysis, is a gauge of the extent of maladjustment within each individual shop.

In a pamphlet issued by the Federal Board for Vocational Education (Bulletin No. 46), it is stated that the reason why labor turnover is higher among women than among men is be-

cause men, to a much greater extent than women, have persons dependent upon them for support and do not quit so readily. In analyzing the turnover of the 12 firms, however, these facts stand out with significance.

(a) That where turnover for a given shop is high, it has meant in three instances that the reason for the high rate of turnover among women was due to the high labor turnover in one department.

(b) That in the majority of cases, the women employees were doing the least skilled work. All turnover studies that have been made, show that turnover among the unskilled is higher than among the skilled, whether man or woman.

(c) The women employees on the whole represented a very much younger group than the men employees and turnover is usually higher among young workers than among the more mature ones.

(d) The records indicate in six instances a higher turnover rate among unmarried than among married women, and in six instances, a higher rate among married than unmarried.

The evidence obtained from the plants who have established employment departments in charge of trained executives showed a noticeable turnover decrease within a twelve months period. Women respond and react to a well organized, centralized employment department perhaps more than men, in that many of their work problems are personal problems and can be easily adjusted by a sympathetic and understanding employment director.

One manufacturer testified to the fact that he had reduced his turnover 50% by (1) comprehensive analysis of the requirements of each job; (2) careful selection of applicants; (3) comprehensive training of new hands; (4) systematization of promotions; (5) investigations of causes for leaving; (6) regulation of employment.



Gym games are used a lot by the Boy Scouts.

# THE NATION'S HEALTH

(Continuing MODERN MEDICINE)

*A Monthly Magazine Devoted to Community Health with Special  
Reference to Industrial and Institutional Health Problems*

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## Attitude of the Physician to the Health Center

Impartial Judgment and Common Sense Must  
Discern and Retain the Changes that Spell Progress

BY ALEXANDER LAMBERT, M.D., NEW YORK CITY

THE question as to what should be the attitude of the medical profession towards health centers is equivalent to saying: In what manner and how far is the medical profession willing to change its present method of practising its profession? Health centers represent but one means to be used for the socialization of the profession and the reorganization of the basis on which the service rendered by physicians shall be offered to the sick. What, then, are the conditions in the profession itself which require change from the present method so long used in the practice of medicine, that is, the individualistic care of the sick by the individual physician? If any change be necessary, is health centers the only scheme offered or is it the best one offered?

### Looking Backward

One has only to look back for a generation to appreciate the great changes that have come about in the method of medical practice. Thirty years ago medical practice had just begun to become differentiated into the numerous specialties, and even the broad lines between surgery and medicine were just beginning to be defined. This specialization eradicated the idea that the general practitioner alone could solve all questions in medicine, and specialization in medicine has increased the medical value of the service rendered to the

*Increased scientific knowledge in causation and prevention of disease has outrun scientific development of therapeutics, temporarily injuring medical service.*

*The test of ultimate values, however, lies in the efficacy of present working hypotheses. Applied art and theory are reciprocal and must be correlated to serve as a mutual check.*

*Science is the search for and development of truth which ceaselessly expands. Progress is change. Neither esoteric aloofness nor inflexible resistance to change will serve to stay the change that means progress.*

people. It has benefited the profession economically and the public scientifically, because it has permitted men to develop an unusual skill in medical service along the lines of their particular interests without being overburdened with other portions of medical service which they considered distasteful. The resulting advances in surgical technic and the extension of therapeutic possibilities through surgical procedure have been so striking that they have caught the imagination of the public to the exclusion almost of the advances of other fields of medicine; and being of a peculiarly concrete nature, and thus

readily grasped and appreciated as definite concrete service rendered, highly specialized surgical service has been able to command enormous fees which heretofore had not been thought of in medicine. However advantageous this development may have been economically, it has not been without many drawbacks in its results upon the surgeons themselves and the rest of the profession.

Another great development of medicine has been the scientific study of the causation and control of disease, especially of the group of diseases that we designate as communicable. During this same period we have seen preventive medicine represented formerly by health departments with police power used only to prevent the spread of epidemic diseases develop into highly organized departments of the government controlling, not only the spread, but extending care in communicable diseases. The prevention of disease through sanitation, has been made effective through study in the scientific laboratories, through the manufacture and disbursement of vaccines and antitoxins and by therapeutic care in many diseases. One of the chief sources of pride to the medical profession in past years has been its development of preventive medicine and the domination and practically the eradication of certain diseases which a generation ago were of common occurrence and whose routine care formed a great part of the

medical service rendered to the community. All forms of laboratory service have been so enhanced in diagnostic value that clinical laboratory service is now a necessity for the intelligent practice of medicine. All these developments of medicine have so increased its scientific accuracy that it is of enormously greater value in the protection against disease.

On the clinical side the greatest achievement has been in diagnostic accuracy. The leaders in the profession have been those physicians who have made the great scientific discoveries in the laboratories and in the study of the science of medicine, or else in the specific application of the results of such study have shown in the diagnosis of disease that increased acumen which more clearly recognizes the different morbid processes. The great clinicians of the recent past have been men noted for their diagnostic abilities. Some of these leaders taught accuracy of diagnosis, but vigorous contempt of earlier therapeutic methods. Their students have gained in scientific accuracy, but with a diminished sense of responsibility for the care of the sick. It is true that many of our former ideas in pathology and the general conception of disease had to be discarded, which tended in itself to modify therapeutics, but the student too inexperienced to judge, discarded useful as well as useless knowledge. The brilliant results of serum treatment in a few diseases have increased the demand for specific forms of medication in all diseases. A skepticism has therefore arisen regarding all forms of treatment which did not coincide with this point of view. Much of the teaching to medical students transmitting the traditions of the profession to the coming generations, has reflected this same point of view, and greater stress has been laid upon multiplicity of diagnostic tests than upon the care of the patient and at times even the personality in the patient seems to have been forgotten. These statements apply more to internal medicine than to surgery. The whole of surgery with its enormous development is, in the final analysis, only a modified and highly mechanical form of specialized therapeutics which has bestowed incalculable benefit otherwise unattainable, but surgery is limited in its application and many of the morbid processes which destroy the usefulness and happiness of man today are far outside the domain of surgical interference.

The great development of medical schools and all branches of scientific

medicine has been rendered possible by the generosity of wealthy men. In the development and founding of laboratories it has been realized that the permanent staff are often performing unremunerative toil as far as outside income is concerned and must therefore be supported by endowment. The logical outcome has been that in order to obtain the best results, men must be found who are willing to give their whole time to anatomy, physiology, chemistry, and whatever other service can give no income from clinical sources. In the last few years the acme of the full-time idea has been reached, and the endowment of medical schools has been conditional on the agreement that physicians in the clinical practice of medicine and surgery should give their full time to the practice in the hospitals and to medical research, cutting themselves off as by an impassable wall, from those who may seek their special skill from the outside. It seems to the generous minded men of affairs who give the endowment, that they obtain a large return on their investment when they obtain for small salaries, men who in the outside world could earn four or five times as much as they agree to take in their restricted and secluded environment. In order to accept an honorable teaching position the sacrifice of 75 to 80 per cent of their earning power may be justly said to be a high devotion to a professional ideal.

That the transmission of the traditions of the profession, however, should be left to men cut off from full contact with the world, cut off from the puzzling questions of family life, from the questions of mental conflict of the individual, and from all those innumerable sources of influence on personality which make or break the success of medical care with the individual, looking therefore on medicine and surgery simply as the care of a morbid process with personality left out, should transmit the whole tradition of medicine to the succeeding generation, is neither good for the profession nor for the patients themselves. That this harm done to the highest ideals and the traditions of service to the sick was not acquiesced in by the mass of the profession has been evident from the fact that, in order to be sure of the fulfillment of the full-time idea each medical school to obtain its endowment, it is said, has had to sign an iron-clad agreement to carry out the full letter of the law of full-time service. The resistance of the profession has not been in vain to these limitations of

its ideals of service as shown by Columbia, the last university to which endowment has been given. This University has only agreed to make a trial of the full-time method and has not signed any further agreement. It is noticeable, moreover, that in the plans being brought forward on the medical side at least, it is frankly admitted in the development of the new scheme in Columbia that while the head of the department will be full time, there will be a number of partial-time assistants. These great endowments for scientific medicine have made the full-time man the main beneficiary and not the community which suffers, because the full-time man cannot develop into a practising physician and surgeon who typifies the highest ideals of the profession. It has increased the general tendency of, at least, rewarding the highest honors to those who develop their diagnostic acumen often at the expense of their ability to give curative care.

### A Line of Cleavage

This uneven growth on the diagnostic side of medicine has produced two very marked results, one within, the other outside the profession. The one inside the profession has been the tremendous growth of the departments of health with the gradual encroachment on the field of medicine formerly peculiar to the general practitioner. So brilliant has been the success in preventing the spread of communicable diseases, that it has been realized that the best prevention lies in the early and complete care of all infectious diseases. Preventive medicine is turning its energies towards pneumonia, towards the venereal diseases and the health departments are now endeavoring to limit the spread of all communicable diseases by early and complete treatment. The early care of scarlet fever continued until the dangers of nephritis have passed has greatly diminished the number of nephritics in later life. The development in the dental profession and the appreciation by physicians of the dangers lurking in focal infections, have driven the realization home to every intelligent practitioner that the early, adequate care of many minor infections of today means the effective prevention of many crippling diseases of tomorrow. The purulent gums of today and the small dental abscesses, the annoying tonsilitis, only sufficient perhaps to make one drag wearily to work, if neglected, mean the arthritic cripple and the handicapped



cardiac or the chronic nephritic of no far distant date. In short, the enlargement of the field of usefulness of the health departments means that under sanction of the state and under the development of the prevention of disease, the state has begun to give therapeutic care where it believes it can improve upon the care usually given by the profession. The other reaction outside the profession has been the enormous increase in the various "pathies" and cults which the medical profession believes practice pseudo-medicine. Those with the petty ailments, with the various aches and pains, the unsolved problems left to one side by a busy practitioner, turn to these various cults because of the medical failure to relieve them. These cults could not exist if they did not have uneducated ignorance to play upon and medical mistakes to point to as their justification.

### Costs in Group Practice

The great specialization of medicine with its increased necessity for laboratory diagnosis has unavoidably increased the expense necessary to establish accuracy of diagnosis. This has brought about the result that the very rich can afford modern medicine and the very poor have it given to them in institutions. The self-respecting families living on small incomes willing to pay for what they can afford, cannot obtain the first class medical care of today. This self-respecting group often obtains the best medical care, given through the generosity of individual members of the profession, but the price of medicine to the well-to-do pays for this, or else, the physician goes unpaid. The medical profession has no complaint to make on this score, but it recognizes the injustice to the large number of self-respecting families with small incomes.

It was evident in the report of the Insurance Committee of the American Medical Association two years ago, from sickness surveys made in the United States to ascertain definitely the amount of sickness in certain given localities, that there was always a noticeable number of sick who were not receiving adequate medical care or were not receiving any medical care, though seriously ill. It was further shown that among the poor, often the amount of medical care is in proportion to their incomes. In the dispensary investigations, a noticeable feature in the history of patients coming there for the first time, was the length of time they had allowed the illness to run

before they sought medical aid. All these facts showed a serious amount of uncared for sickness in this country. True it is, that no state has made a complete and perfect survey to ascertain with unquestioned accuracy how much sickness there is within its borders. For this reason a recent writer claims that no deductions are justifiable on any facts yet brought forward, because they are not complete for the whole nation or for any state. This is about equivalent to saying that unless a given patient shows a positive reaction to every laboratory test known today, the patient should go untreated for typhoid or syphilis.

### Dissatisfaction in Rural Service

Another factor to be recognized is the diminution of medical practitioners in the rural districts and the crowding into the cities of the medical profession. Dr. Nicholl, Deputy Commissioner of Health, New York State, at the last meeting of the State Medical Society emphasized this as follows:

Thus from 1911 to 1919 the rural communities lost by removals and deaths 403 physicians, 13½ per cent, while the population has increased approximately 7 per cent. Twenty rural counties which in 1911 had 1,010 practising physicians, in 1919 had but 889, and those who remained had practised on an average of twenty-five years, and only 26 had been in practice for three years or less. In other words, death and dissatisfaction with rural practice have left that field to be covered by the middle-aged and old practitioners, with few or no recruits ready to take their places, when in the course of time they will have gone. Even the great improvement in the roads and in the general use of automobiles has not correspondingly increased the area which fewer physicians can cover, for in the past two and a half years eighty-three communities have appealed to the State Commissioner of Health to supply them with physicians. By advertising in medical journals, medical schools, and elsewhere, and by personal solicitation of possible candidates, the Department has been able to furnish thirty-six physicians; six communities have made arrangements with adjoining towns for medical services; two physicians have returned to their former practices; five communities have requested the Department to withdraw their applications, stating that they have grown tired of answering letters of applicants who, after ascertaining the local conditions, have been unwilling to take the practice. Thirty-two communities are, at last account, still without physicians. As far as it has been possible to ascertain the facts, the great majority of the localities listed contains a sufficient number of inhabitants who are able to pay for medical service to insure a living to the physician. In many of them a

physician may count upon better than an average professional income as it is generally estimated in the case of city practitioners. The history of former incumbents dead or moved away often denotes financial prosperity and the acquisition of a not inconsiderable personal property. But even if it should be granted that these localities do not offer sufficient advantages to induce qualified physicians to settle in them, what about the inhabitants who represent in the aggregate thousands of good American citizens?

It is evident, therefore, that, due to forces within and without the profession, the medical care obtainable is inadequately distributed or it is insufficient. At all events, the lack of medical care received has bred a restlessness to change the present order, hoping through some change that adequate medical care may be obtained. Some years ago, the remedy brought forward was that of Health Insurance, which has been indignantly and vigorously repudiated by the majority of the medical profession. This was brought forward shortly after the Workmen's Compensation Laws had gone on the statute books. The medical profession, not alive to what was then being done, found itself compelled to accept limited returns for a limited period of time for the surgical care of certain seriously injured workmen. Surgeons found they were being exploited both through limitation in the time during which care should be given to the seriously injured, and through the amount paid for the services rendered. The private insurance companies obtained a good business return for the work done but the medical profession was the one that bore the loss, and in many instances, felt itself clearly cheated out of just returns. There has been a gradual readjustment towards fairer dealing in these matters but when the insurance for sickness was brought forward, the profession throughout the country remembered their experience under the Workmen's Compensation Laws and would have none of it and would not even consider the case dispassionately.

### Economic Arguments

The idea on which the request for health insurance was made was that of improved medical service to those who needed it and those who, under present conditions, did not obtain it. The answer of the medical profession to this plea was not a discussion of the medical service, it was an indignant refusal on economic grounds, although in New York the medical details were to be left for considera-

tion between the profession and the State and were not made part of the hard and fast organic law. In the last bill before the New York legislature, the entire decision of medical fees was left to the organized profession through the county societies to be settled between them and the state, with the proviso that no professional services could be given to the insured for less than was agreed upon between the profession and the state. Free choice was granted to the patient of any physician in the state. This insurance scheme was limited to those below a certain income. Beyond all question, sickness when it does come, is a calamity that bears very harshly on families with small incomes and tends invariably through loss of wages, to lower the standard of living of the afflicted family. Health insurance is so far the only scheme offered which gives the financial support to those who need it at the time they need it most and at the same time furnishes them adequate medical care. There is no question, as we have already said, that the care of minor ailments and the early care of all sickness is one of the most active and thorough going preventions against future disease. It is preventive medicine in its most practical form.

Health Insurance having been rejected, the Commissioner of Health of the State of New York, brought forward a year ago, a bill which would permit each county board of supervisors with the approval of the State Commissioner of Health, to establish in any county or part thereof, a health district and to appoint a board of health for each district and such Board of Health was to appoint a full time district health officer. The Board of Supervisors of the county were further allowed to establish community or health centers and in such, provide adequate hospitalization for any one needing hospital care; also clinics for out-patients; and also provide clinical, bacteriological, x-ray, and chemical laboratories auxiliary to the state laboratories, affording modern laboratory facilities needed in the diagnosis and treatment of disease, with service at a moderate charge or fee. They should provide a public health nursing service for all parts of the district, and proper medical supervision for school children and the facilities to enable practitioners to secure adequate treatment for all school children showing physical defects or disease. Provision should be made for headquarters for all other public health.

medical, nursing, and other public welfare agencies of the district wishing to utilize the same. The Board of Supervisors were to provide the funds for these centers and to appoint a Board of Managers of the Health Centers among whom two should be physicians and at least one should be a woman. The Board of Managers to exercise general management and control of the health center, and to make such rules and regulations as may be advised by the Medical Board as necessary for the medical and surgical care of the patients and for the study of the nature and cause of death in cases terminating fatally. Physicians and surgeons rendering services in the clinics should be properly compensated for their services and the Board of Managers is to see that such compensation is provided. Any physician sending a patient to the hospital can continue treatment of that patient if the patient so desires. The bill further provides for the construction and equipment of hospitals in such health centers, the state to pay one half the cost thereof and such payment not to exceed \$750 per bed established in such hospital and no greater hospitalization shall be constructed than one bed to each five hundred of the population affected. The State Health Department to have the power and control of inspection and standardization.

### A Supplementary Service

Without further details this conception of Health Centers indicates that the State of New York realizes the inadequacy of medical care given throughout the state except to its wards receiving charity and to the wealthy who purchase it. The state officials seem to believe that the profession having been given the opportunity to form constructive suggestions and having refused to do so through the Committee of the State Medical Society, it is, therefore, necessary for the state to act through its State Health Departments and extend State care through the local action of county authorities. The two propositions, therefore, offered to the profession are community health centers—which is a modified form of state medicine—and health insurance—which is a mutual economic reconstruction of the costs of sickness by certain employees and their employers aided and controlled by the state and the profession, but the payment guaranteed by the state.

In comparing the relation of the profession to these two methods, in

the bill offered for health insurance the profession was given through the Counties Societies a just control of their remuneration. Under the Health Centers, the profession is under the control of Boards of Managers with medical representatives sitting thereon and these supervised and standardized by the state department of health.

### Where Opposition Arose

The profession has always been interested in state control in the prevention of disease. It has always supported the health department in the development of state control. Only when the individual care of sickness has seemed to be interfered with has any antagonism arisen. The profession has, therefore, become accustomed to an increase of state authority through its state health department and naturally can appreciate with less resistance, changes brought about by this means. State medicine, as developed through local control and county districts, will bear less hardly on the profession, will be more fairly administered and will produce better results with less friction, than if state medicine were centralized in one central bureau and from there distributed over the state. Whether locally applied through counties, or centrally applied over the state, such development is plain state medicine, there is no other name for it and the reality must be squarely faced. If properly administered it can give the desired results, it can improve the health of the people, it can produce both preventive and therapeutic care, and by early care, can assure the prevention of future disease.

Under health insurance, as in the last bill introduced in New York State, it is possible for the profession through mutual constructive work with the state, to practise nearly as they are now doing in individual responsibility and to continue nearer than by any other scheme their present personal methods of practice. This opportunity, however, has definitely been repudiated by the profession. The future development of state medicine will mean further Federal development in control and supervision. One cannot contemplate federal control of medicine with any enthusiasm. A representative form of government such as ours and the federation of states such as is our Government, has not, up to this time, shown evidence that it can run and control by governmental ownership the railroads or properly administer med-

ical care to the men it was in honor bound to care for, the left over sick and wounded from the late war.

Public opinion demands a change in the present situation and is insistent that the medical profession should realize its responsibilities that with improved scientific knowledge it should give increased and better therapeutic care. So far the profession has answered this appeal in the negative on economic and all other grounds except that on which the appeal has been based.

It is very difficult for medical men to build up constructively any policy for work. Their whole life and their whole training is made up of broken thinking through constant change of subject in that thinking. Unable to obtain sufficient time to themselves to think connectedly and constructively, it is very difficult for medical men to think out any personal detail in any plan offered. Their opposition, therefore, to health insurance is easily understood. As the situation now stands, health insurance which would permit them to go on as they are, has been rejected. A form of partial state medicine through local application to soften its universal grip is offered instead. The profession is in the habit of thinking along the lines that the health centers offer and, at the present moment, the probability seems that the profession is tending that way. To many of us, however, health centers represent state medicine with all its bureaucratic control and limitations of individual development and personal service which, in the past, have made the practice of medicine an opportunity to follow a profession which permitted the practical application of high ideals. The highest development of any profession will, in my opinion, be injured by the deadening hand of bureaucratic direction.

What then should be the attitude of the profession towards health centers? The profession cannot without injury to itself always obstruct and oppose the desire and plans of the community for increased and better medical service. The continued passage of resolutions against all constructive plans offered will in the end result in any angry response by legislative action and the increased licensing of new pathies and cults. The most practical answer to all the unrest and demand for improved medical service is for the medical profession itself to formulate a constructive plan of better service given through concerted action by county

medical societies whereby adequate hospital facilities can be furnished for the medical, surgical and nursing care of the sick and which will give hospital opportunities to all physicians of each county. These hospi-

tals must be endowed with modern laboratory equipment for only with proper tools to work with, can improved medical service be provided in the rural districts. Manifestly, rural standards should be lower.

## Public Health Association

THE Fiftieth Annual Meeting of the American Public Health Association was held in New York, November 14-18. Never in the history of public health has there been a more interesting or a more momentous gathering of health officials, better clinical demonstrations, a more important health exhibit, or a more inclusive program. It is impossible to do justice to the wide range of activities in a short comment.

The Jubilee Historical Volume, consisting of nineteen essays by leaders of public health, is a 480-page book edited by Dr. M. P. Ravenel for the occasion. An interesting souvenir of the occasion was the Stephen Smith Medallion, a bronze paper weight medal commemorative of Dr. Smith's notable service to public health, and Dr. Smith's own story of the early sanitary conditions in New York.

All the living past presidents of the Association but six are present at the meeting. They include: Dr. Stephen Smith, New York City; Dr. S. H. Durgin, Millbrook, Mass.; Dr. Peter H. Bryce, Ottawa, Ont.; Dr. Gardner T. Swarts, Providence, R. I.; Dr. Rudolph Hering, New York City; Dr. John F. Anderson, New Brunswick, N. J.; Dr. W. A. Evans, Chicago; Dr. Chas. J. Hastings, Toronto, Ont.; Dr. Lee K. Frankel, New York City; and Dr. Watson S. Rankin, Raleigh, N. C.

### Incoming Officers

The Governing Council, at its Wednesday afternoon meeting elected the following officers and directors of the A. P. H. A. for the year 1921-22:

President—Allen J. McLaughlin, M. D., Assistant Surgeon General, U. S. Public Health Service.

Vice-Presidents—Haven Emerson, M.D., former Health Commissioner of New York City; Alfonso Pruneda, M.D., General Secretary, Superior Department of Health of Mexico; Royal S. Copeland, M.D., Health Commissioner of New York City.

Executive Secretary—A. W. Hedrich, C. P. H.

Treasurer—Roger I. Lee, M.D., Professor of Hygiene, Harvard University, Cambridge, Mass.

### Governing Council

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### Michigan Health Meeting

Dr. R. M. Olin, commissioner, has announced a public health conference in Lansing, November 28 to December 2, in conjunction with the winter meeting of the Michigan Public Health Association. The state department of health has requested that every health officer and nurse in the state attend the meeting. Short courses of instruction and demonstrations will be given in problems of health administration and disease control. Among the speakers were: Dr. William H. Park, director of the Bureau of Laboratories, New York City; Dr. Haven Emerson, former health commissioner of New York City; Dr. Wade H. Frost, dean of the department of physiology and hygiene, Johns Hopkins University, Baltimore; Harriet Leete, R.N., American Child Hygiene Association; and Dr. Charles E. North, director of the North Public Health Bureau, New York City.

# Infant Mortality as an Index of Progress

## Improvement is Greatest Where Welfare Activities Receive Attention

By FLORENCE L. MCKAY, M.D., CHILDREN'S BUREAU, UNITED STATES DEPARTMENT OF LABOR, WASHINGTON, D. C.

THE infant mortality rate is a direct index of progress in the improvement of conditions which affect social welfare, including especially health, education, and standards of living and of morals. Enlightenment in these fields, if accompanied by active endeavor, will result in a marked saving in infant lives in any community, from the smallest hamlet to the largest nation. This should be attended by an equally marked improvement in infant vigor in general, for those very endeavors which by their resulting improved

we compare with other nations? What are the comparisons between states, and between municipalities? The tables and comments presented in this article will endeavor to answer these questions and to give a bird's eye view of variations in infant mortality rates.

### International Comparisons

International interest in infant mortality rates is unusually keen at the close of a world war and in the wake of a world pestilence which have decreased to no inconsiderable degree the peoples of many nations. Table I, based upon the latest available vital statistics, indicates the relative position of twenty-one countries with regard to infant mortality rates.

TABLE I.—INFANT MORTALITY RATES FOR CERTAIN FOREIGN COUNTRIES AND THE UNITED STATES<sup>1</sup>

Country and year	Infant mortality rate
Chile (1919) .....	306
Hungary (1915) .....	264
Spain (1918) .....	183
Japan (1917) .....	173
Germany (1918) .....	154
Italy (1915) .....	147
Quebec (1917) .....	138
France (1919, 77 Depts.) .....	119
Finland (1917) .....	118
Scotland (1919) .....	102
Uruguay (1919) .....	101
Ontario (1918) .....	99
Denmark (1919) .....	92
England and Wales (1919) .....	89
Ireland (1919) .....	88
Switzerland (1918) .....	88
United States (Birth Reg. Area: 1919) <sup>2</sup> .....	87
Netherlands (1919) .....	84
Sweden (1915) .....	76
Australia (1919) .....	69
Norway (1917) .....	54
New Zealand (1919) .....	45

1. Compiled from official figures as given in the Statistical Year Books of the various countries, or from the *Annuaire International de Statistique*. The figure given for the United States is taken from United States Bureau of the Census Birth Statistics, 1919. Latest figures available up to 1919.

2. Since this article went to press a rate of 86 in 1920 has been reported for the United States Birth Registration Area.

The table shows that New Zealand has the lowest rate—45 in 1919—and Chile the highest—306 in 1919. Thus in the same year, the rate in Chile is nearly seven times that of New Zealand. The next highest rate, which is 264 for Hungary, is a war rate and is unusually high for that country.

It will be noted that in 1919 the United States ranked sixth among nations, with a higher rate than New Zealand, Norway, Australia, Sweden,

and Switzerland. This is graphically portrayed by the infant mortality thermometer shown in Chart I.

In 1916 the United States was eleventh in rank. At that time, in addition to the countries named above, the rate in this country was also higher than that of England and Wales, Ireland, Scotland, and the Netherlands.

During the past decade most European countries from which vital statistics are available (Table II) have shown a steadily decreasing infant mortality rate, barring three inter-

INFANT MORTALITY THERMOMETER  
DEATHS UNDER ONE YEAR OF AGE PER 1,000 BIRTHS

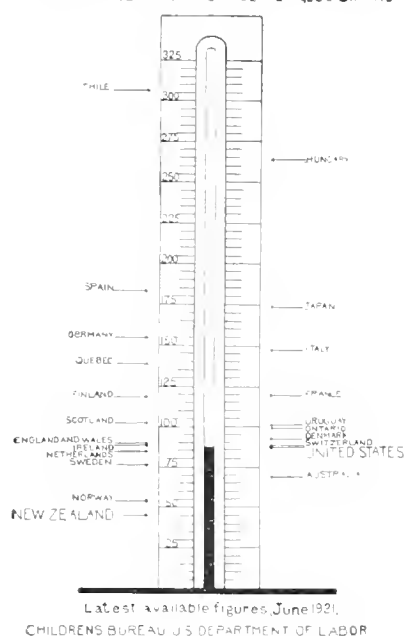


Chart I. The comparative showing of the United States, revised in accordance with the latest figures, is indicated. Much still remains to be done in improving conditions that affect infant welfare.

conditions reduce infant mortality must at the same time create possibilities for more perfect health.

With this in mind, the variations in infant mortality rates in groups of peoples, and comparisons between similar units are of special interest. For example, with the Nation as a unit, what are the indications of progress in our own country and how do

1. United States Bureau of the Census, Birth Statistics, 1919, pp. 37-42.

DEATHS UNDER ONE YEAR OF AGE,  
BY MONTHLY AGE GROUPS  
DEATH REGISTRATION AREA 4 1919  
TOTAL 161,621

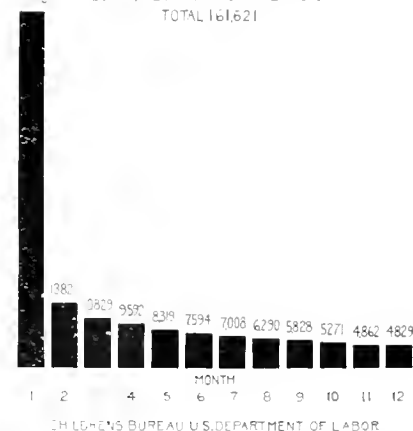


Chart II.—The number of infant deaths in the first months is more than five times the number in the second month, and sixteen times the number in the twelfth month.

ruptions, the 1911 epidemic of summer diarrhea, the world war, and the 1918 epidemic of influenza.

In a notable article on "Infant Mortality in Europe" in the *International Journal of Public Health*, September, 1920, Knud Stouman brings out these encouraging facts: "When the war broke out the movement for the preservation of infant life was progressing rapidly, and it is gratifying that, even though the progress has been somewhat checked, most of the attained results have been maintained. The year 1915 was generally unfavorable, although less so than 1911, but 1916 is among the best years on record. Great Britain, Holland, and the Scandinavian countries have maintained the low infant mortality rates of the pre-war years.

TABLE II.—INFANT MORTALITY FOR CERTAIN FOREIGN COUNTRIES AND THE UNITED STATES

Country.	Infant mortality rates a/									
	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919
Hungary	194	207	186	201	195	204				
Chile	267	333	287	280	295	254	241	269	255	306
Austria	189	207	181	190						
Japan b/	161	158	154	152	159	160	170	173		
Spain	149	162	137	155	152	152	147	155	183	
Germany	102	192	147	151	164	154	136	159	154	
Italy	142	153	130	137	130	147				
France	111	157	104	109	109 c/	141 c/	132 c/	123 c/	138 c/	119 c/
Finland	118	114	103	113	104	110	110	118		
Scotland	108	112	105	110	111	126	97	107	100	102
The Netherlands	108	137	87	91	95	87	85	87	93	84
England and Wales	105	130	95	108	105	110	91	96	97	89
Ireland	95	94	86	97	87	92	83	83	86	88
United States (Birth Reg. Area)						100	101	94	101	87
Switzerland	105	123	94	96	93	92	101	94	101	87
Sweden	75	72	71	70	73	76	78	73	82	
Denmark	102	106	93	94	98	95	100	99	74	92
Australia	75	68	72	72	71	68	70	66	59	69
Norway	68	65	68	65	68	68	64	54		
New Zealand	68	56	51	59	51	50	51	48	48	45
Quebec	178	186	161	168	161	153	165	138		
Ontario	117	114	110	118	103	102	107	92	99	
Uruguay	111	109	118	93	95	111	124	107	110	101

a/ The figures in this table were taken from the statistical reports of the various countries when possible, or computed from figures from *Annuaire International de Statistique* Tome II (1917).

b/ These rates were computed from figures from *Annuaire International de Statistique* Tome V, (1917).

c/ Without the invaded departments.

The rates for France are somewhat higher, although not nearly so high as during the first decade of the century. Switzerland has succeeded in materially decreasing her infant mortality, while no impairment is remarked in Germany. No recent data are available for the countries of Eastern Europe."

Table II shows the annual rates since 1910 in countries for which statistics are available and indicates the general downward trend of most nations. The United States does not enter into comparison with other nations prior to the establishment of the birth registration area in 1915.

The 1919 infant mortality rate is 87 per one thousand live births. During the 1915-1919 period for which Census Bureau data are available, this rate in the United States has been reduced. The initial 1915 rate was 100. During the year 1916 it rose one point, to 101, but dropped the following year to 94. The rise in 1918 to 101 is attributable to the influenza epidemic. During the spring of that year the Children's Year Campaign was started, a war measure inaugurated by the Child Conservation Section of the Council of National Defense and the Federal Children's Bureau. Thousands of infants were weighed, measured and examined; public interest in the welfare of infants and children was aroused; many new welfare movements were initiated and those already existing were stimulated to increased activity. During the following year, 1919, the rate fell to 87, seven points below the 1917 figure. The 1920 rate, 86, is only slightly lower than that of 1919. Public in-

terest in infant welfare has continued to grow. It will be of interest to note whether there will be a continued reduction in the rates for 1921 proportionate to the increasing attention to the welfare of infants.

In this connection there is one important point that should not pass un-

noticed. The number of infant deaths in the first month is more than five times the number in the second month and sixteen times the number in the twelfth month, as is graphically shown in Chart 2.

This high mortality in the first weeks shows less appreciable reduction than that of the later months of the first year. The death rate for babies under one month of age fell from 44.4 in 1915 to 41.5 in 1919, a decrease of 2.9 for the four-year period, while the death rate for babies ages from one month to one year fell from 55.6 in 1915 to 45.2 in 1919, a decrease of 10.4 for the same period. Thus the decrease in infant mortality is largely a decrease in the deaths after the first few weeks of life. Statistics for 1919 show that 76.9 of the large number of deaths in the first month are due to natal and prenatal causes. These facts seem to indicate that growing infant welfare activities have reduced the number of deaths in the later months of the first year of life, when deaths are due chiefly to diseases of infancy, but that prenatal and maternity care have not been improved to the extent of effecting a corresponding decrease in

TABLE III.—DECLINE IN INFANT MORTALITY RATES FOR STATES IN THE BIRTH REGISTRATION AREA, 1915-1920

State	Infant mortality rates in the Birth Registration Area					
	1915	1916	1917	1918	1919	1920
Area	100	101	94	101	87	86
California	100	101	94	101	87	86
Connecticut	107	101	94	107	86	92
Indiana	—	—	86	87	79	82
Kansas	—	—	77	80	70	73
Kentucky	—	—	87	93	82	73
Maine	105	108	93	101	91	92
Maryland	—	121	120	140	105	104
Massachusetts	101	100	98	113	89	91
Michigan	96	96	88	89	90	92
Minnesota	70	70	67	71	67	66
Nebraska	—	—	—	—	—	69
New Hampshire	110	115	110	113	93	88
New York	99	94	91	97	84	86
North Carolina	—	—	100	102	84	85
Ohio	—	—	92	94	90	83
Oregon	—	—	—	—	63	62
Pennsylvania	110	114	111	129	100	97
Rhode Island	120	111	108	126	2/	2/
South Carolina	—	—	—	—	113	116
Utah	—	—	69	64	71	71
Vermont	85	93	85	93	85	96
Virginia	—	—	98	103	91	84
Washington	—	—	69	69	63	66
Wisconsin	—	—	78	79	80	77
District of Columbia	111	106	97	112	85	91

2/ U. S. Bureau of the Census, Birth Statistics, 1915-1916; Infant Mortality in the Birth Registration Area of the United States, 1920.

2/ Dropped from the birth registration area.

TABLE IV.—VARIATIONS IN INFANT MORTALITY RATES IN FAVORABLE AND UNFAVORABLE DISTRICTS IN THE SAME CITIES

City	Infant mortality rates		
	Favorable district	Unfavorable district	Favorable district
Baltimore, Md.	104	147	66
Bary, Ind.	151	143	84
Cary, N.C.	86	112	74
Chicago, Ill.	85	125	30
Cincinnati, Ohio	107	120	71
Cleveland, Ohio	97	114	71
Dayton, Ohio	120	174	97
San Francisco, Calif.	104	120	120
St. Louis, Mo.	124	271	50

deaths during the first month of life, which are largely due to natal and prenatal causes.

The fall from 1915 to 1919 is 13 points for a four-year period. If the decrease continues at this rate, it will take about fourteen years for our country to reach the present rate of 45 in New Zealand.

### Mortality by States

Most of the States in the birth registration area show a similar downward trend of infant mortality rate, as may be noted from Table III.

All of the states of this area except Maryland, Minnesota, New Hampshire, and Vermont have state child hygiene bureaus or child welfare bureaus dealing with child hygiene. Except in the case of Kansas, Massachusetts, New York, and Ohio these bureaus have been established since 1915.

From the 1920 statistics issued by the United States Bureau of the Census it is found that among the cities having in 1920 a population of over ten thousand, only three have a rate as low as New Zealand.

Berkeley, Calif. . . . . 44  
North Platte, Nebr. . . . . 39  
Pasadena, Calif. . . . . 31

The six cities in the United States having the highest rates are as follows:

Dunmore, Pa. . . . . 229  
Charleston, S. C. . . . . 209  
Ogdensburg, N. Y. . . . . 190  
Florence, S. C. . . . . 179  
East Chicago, Ind. . . . . 174  
Augusta, Me. . . . . 160

It will be noted that the highest municipal rate, 229 for Dunmore, Pa., is considerably lower than the highest rate among nations for 1919, —306 in Chile (Table I).

Comparing the rate of the birth registration area with municipal rates, it is found that the highest municipal rate is more than two and one-half the rate of the birth registration area, while the lowest municipal rate is less than three-eighths as high as the rate for the birth registration area. However, rates for municipalities for the period 1915-19 show a general downward trend, similar to that among nations and States, indicating general improvement in

conditions which affect child welfare.

The wide range in rates which is found in nations, States, and municipalities is apparently characteristic of different localities in the same city. Variations in rate in favorable and unfavorable localities in nine cities in which infant mortality studies have been made by the Children's Bureau are shown by Table IV.

### Summary of Findings

Infant mortality rates show a gradual downward trend in nearly all countries for which statistics on this point can be obtained. New Zealand has the lowest rate, 45 per one thousand live births, while other countries have rates from one and one-fifth to nearly seven times higher than New Zealand.

In the United States birth registra-

tion area the rate has been reduced from 100 in 1915 to 86 in 1920. A downward trend is also found in individual states and municipalities. This decrease is less marked for the first month of life, when the chief causes of death are natal and prenatal, and more marked in the later months, when diseases of infancy are the main causes, thus indicating an increasing attention to infant welfare activities without a corresponding increase in prenatal and maternity care.

The gradually decreasing infant mortality rate of most of that portion of the world from which statistics are available is indicative of progress, but the figures show that much still remains to be done in improving conditions which affect infant welfare as a field in which the right measures may reasonably hope to prevail.

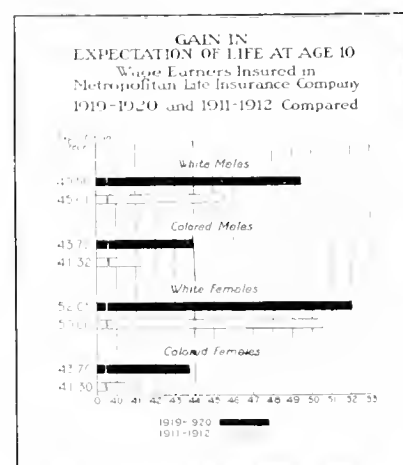
## Life Span Lengthened

THERE is probably no more convincing instance of the beneficial effect of a well considered campaign of health education and of health service than that afforded by the mortality experience of the policyholders of the Industrial Department of the Metropolitan Life Insurance Company. In 1910, this company put into operation a plan, the purpose of which was to reduce the death rate among insured wage-earners. From year to year, the program was extended and now embraces in excess of thirteen million men, women and children of the wage working population who are policyholders. At the end of ten years, the death rate had been reduced more than one-fifth. A total of 38,000 fewer deaths occurred in 1920 than if the 1911 mortality rate had prevailed.

But, there is an even more instructive measure of the value of public health work than the reduction of the death rate. It is the added duration of life of the insured groups as measured by life-tables. At the beginning of the campaign, white males at age 10 could expect to live 45.6 additional years. At the end of the decade, this expectation was increased to 49.5 years. This means a clear gain of nearly four years for every insured white male. *There is no record of a like increase in the life span, within so short a period, in the whole literature of public health work.*

The white female policyholders did not show so great a gain as the white males.

These figures are after all the ultimate test of the value of health work. They show at a glance what the effects are in terms of a lengthened life-span. A year added to the duration of life of every person at age ten is a very tangible addition to the assets of a country; for the ages beyond ten are years of productivity. In connection with insured white males, the increase is virtually four years per person. If such an increase in expectation of life could be made general for the entire white male population of the United States, the gain to the present generation in this country would be stupendous. This is the lesson which must be drawn from the health work of the company among its members. The following chart shows graphically the figures for each of the color and sex groups. The favorable experience was between the ages of forty to sixty.





# Food Values in Canned Meats

By GEORGE W. TRAINOR, ARMOUR & Co., CHICAGO

THE canning industry is little over one hundred years old. Late in the Eighteenth Century, Nicholas Appert, a Frenchman, began a series of food experiments



All meats used for canning are carefully inspected by Government employees throughout the entire process from killing to canning.

with the object of finding an improved method of preserving them. His vast experience in dealing with foods proved to be of great value to him in his experiments, which resulted in his successfully preserving various kinds of meats, vegetables, fruits, etc. These he kept intact for several years, and upon opening them found them to be as appetizing as freshly prepared products.

Prior to this time foods that were to be kept any length of time were pickled, dried, smoked, or preserved in sugar, methods which left much to be desired, for they caused waste, spoilage, loss of flavor, and color, etc.

Appert<sup>1</sup> published the results of his experiments in 1810, and in appreciation the French Government awarded him a prize of twelve thousand francs, at the same time bestowing upon him the title of "Father of the Art of Canning." As he gives it himself, Appert's method of preserving consisted of:

- (1) Inclosing in the bottle or jar the substances to be preserved.
- (2) Corking these different vessels with the greatest care, because suc-

*Stability and general well being fluctuate according to nutritional conditions, the regulation of physiologically associated organs being almost wholly a matter of bodily chemistry.*

*Likewise, the welfare of nations is bound up with the regularity and the even distribution of the food supply. The provision which first conserved foods in seasons of abundance against periods of dearth marked a fundamental condition of progressive development.*

*Professor L. Bolk's thesis before the Eugenics Congress was that the changes in metabolic processes incidental to the transition from a vegetable to an omnivorous diet sufficiently account for the transformation of the order of anthropoid apes into the *Homo homo*. The whole subject is of the greatest interest and importance.*

cess depends chiefly on thoroughness in closing.

(3) Submitting these substances, thus enclosed, to the action of boiling water in a water bath for more or less time, according to their nature.

(4) Removing the bottles from the water bath at the time prescribed.

This method includes all the funda-

mental principles of modern canning.

Appert laid special stress upon the necessity of cleanliness, freshness of products, expedition in handling, and upon great care being exercised to have containers air tight. He says that sterilization is invariable if the above details and correct time of heating are observed. He did not know why foods canned in this manner retained their freshness, but ascribed it to heating with the exclusion of outside air.

We now know that there are micro-organisms in all foods, in the air, water, containers, etc., which cause decomposition and spoilage; also, that sufficient heat kills them and, if the jar or can is air tight, those from without are excluded, thus causing the contents to become and to remain sterile.

Soon after Appert's work was published, the great usefulness and advantages of such a method were seen, and commercial canning began about 1820. About this time tin cans began to be used instead of glass—hence the name, "canning."

This industry has advanced most rapidly in the United States—in fact the estimated value of canned foods in this country alone was more than four hundred million dollars in 1919.

## Methods of Canning

Meats, which form such a highly important part of the human diet,

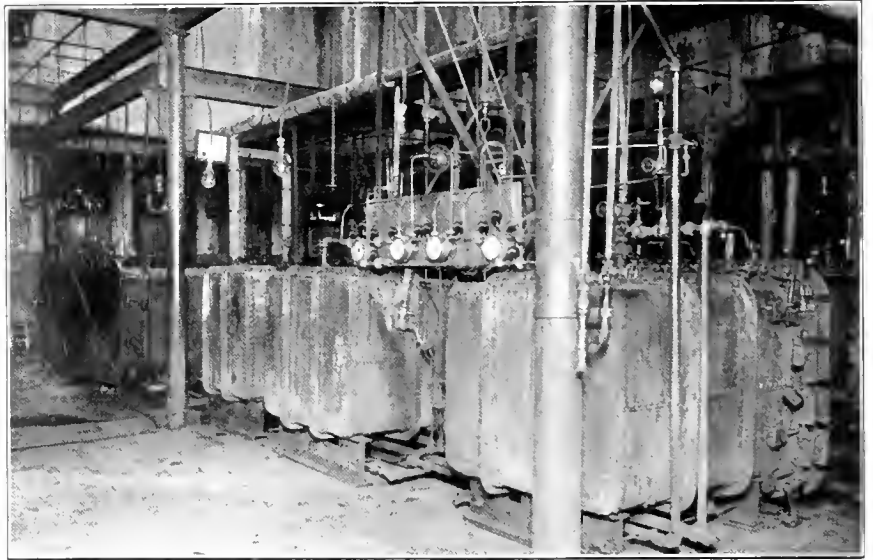


Vacuum machine for drawing the air out of the cans. While in this condition a drop of solder is put on the vent hole with an electric hot-point iron.

1. The Art of Preserving Animal and Vegetable Substances for Many Years, by Nicholas Appert, translated by K. G. Bitting.

are more perishable than any other food products, and, of all methods of preserving them, canning is in many ways the most satisfactory. In most cases meat to be canned is parboiled or cooked for a short time to remove the moisture and blood. It is then conveyed to trimming tables, where all skin, gristle, etc., are carefully cut off. From here it goes to large machines which stuff or compress it into cans, or, as in the case of some products, such as tongue, it is put in the cans by hand. After each can is weighed, a closing or capping machine closes it, leaving a small vent hole in the cap through which the air is drawn out. This latter operation is performed by a vacuum machine which consists of an enclosed circular chamber with a revolving table in it. The cans are placed in this machine, the air drawn out, and while in this condition a drop of solder is placed on the vent hole with an electrically heated point. After coming out of the vacuum, the cans are thoroughly inspected for leaks, and, if any are found, they are repaired at once. Next comes sterilizing, or processing. The cans are placed in large iron retorts, or autoclaves, and kept there at a constant temperature for a definite length of time, according to the product being sterilized.

In the early stages of the industry, all processings was done in water. Later salt water, calcium chlorid water, and oil baths were used to obtain a higher temperature than could be reached with water alone. At the present time most processing is done in steam retorts, or autoclaves. It has been found that most canned products are more palatable if heated at a high temperature for



Temperature and pressure controlled retorts for the sterilization of canned meats.

a short period of time, than at a low temperature for a longer time, although this is not true in all cases. Late types of retorts are equipped with controls for pressure, temperature and time, and there is no danger of under or over-sterilizing. After this operation the cans are labeled and packed, that is, they are packed after having been inspected again and all imperfect cans have been thrown out.

#### Precision in Details

To insure satisfactory results in the process of canning, many details must be carefully observed, a few of the most important of which are:

- (1) The use of fresh raw products, for the quality of the finished product depends, of course, upon the grade and condition of the meat canned.
- (2) Expedition in handling.

(3) Cleanliness of all containers, machinery, workmen, etc.

(4) The use of air tight and well vacuumed cans.

(5) Correct time and temperature of sterilization.

If the above precautions are taken in canning meats, the finished products are bound to be the purest and most sanitary of foods.

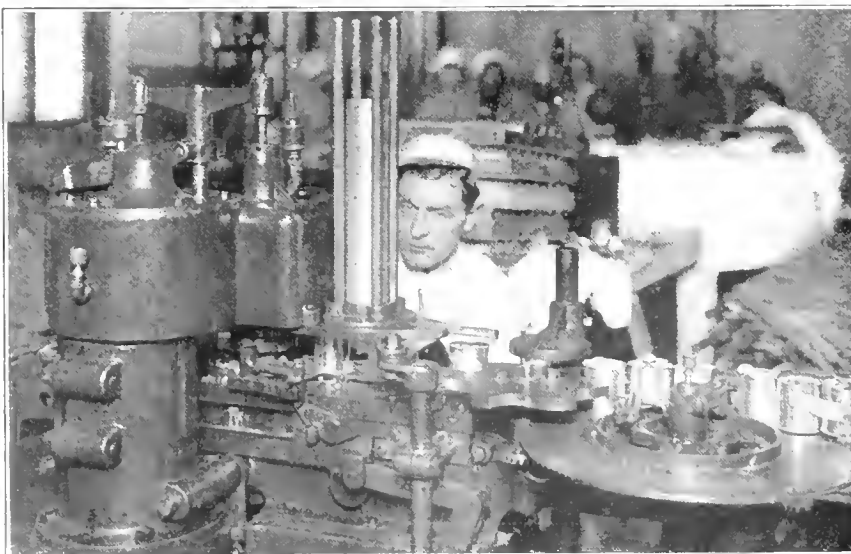
Commercially canned meats are inspected by government employees from the time the animals are killed until the cans are shipped, and the Government's stamp of approval is on every can, a fact which protects the consumer against diseased or unfit meat.

In many places throughout the world where fresh meats can not be obtained in good condition, also where none are to be had at all, canned meats are a necessity, and, even where the supply of the fresh product is unlimited, they are a great convenience. Undoubtedly, were it not for the widespread activity of the canning industry, it would be impossible for the world to enjoy the almost unlimited variety it now does in the way of meats, fish, fowl, etc.

The process of preparing and sterilizing canned meats is such that all the natural flavor and food value of the fresh product is retained and the perfect edibility of the contents insured.

#### A Real Conservation

Aside from their food value, canned meats are economical, in that they can be shipped any place without refrigeration and held indefinitely in ordinary storage. They remain good as long as the can is solid. Most canned meats are ready to serve



Sanitary closing machine which puts the top on the can without the use of acid or solder.



A daily inspection of the hands of all employees who handle the meats is required.

with little or no preparation. Their economic advantages are well set forth in the *Daily Express* of February 21, 1917, as follows:

Lord Derenport's meat ration of two and a half pounds is represented by less than one pound of corned beef, which can be bought at about one-third of the price of its equiva-

lent in butcher's beef. Corned beef is a most economical form of beef ration, both as regards shipping space and cost to the consumer. Corned beef can travel as general cargo, while it occupies only one-third of the space required by chilled or frozen meat. Not only does it effect a great saving of freight, but, seeing that it is already cooked, no fuel is required.

There has been a great deal of prejudice against canned meats and canned foods in general, a fact which in great part may be attributed to the publication of sensational newspaper stories about people becoming poisoned through eating canned goods. Many of these have been proved to have no foundation. The process of their manufacture insures their being the safest foods, the routine care which is given all foods being sufficient to eliminate the danger of their being unfit for human consumption.

## American Child Hygiene Association

THE American Child Hygiene Association was organized (under the name, The American Association for Study and Prevention of Infant Mortality) at New Haven in 1909, and during the first week of November, 1921, it returned to its birthplace as a very healthy and highly developed youngster. The last two years under the leadership of Dr. Philip Van Ingen and Dr. H. L. K. Shaw have seen a rapid development in the work of the organization, which now has permanent offices in Baltimore, employs a general director, an assistant general director and a director of field work, has an annual budget of some \$65,000 a year, and publishes its own magazine, *Mother and Child*.

The address of Dr. H. L. K. Shaw, the president for the New Haven meeting, presented an admirable analysis of the history of the child hygiene movement in Europe and in America. He reported that thirty-eight cities and forty-five states now have special departments of child hygiene and recorded the remarkable results which have been accomplished in the reduction of infant mortality during the past decade. In 1910 the infant mortality rate was 149 in the United States and 109 in England, while in 1920 the respective rates were 86 and 80.

One of the most notable tendencies

of the meeting was the broadening out of the campaign to include the whole field of child health and the enlistment in the directorate and in the program of a large number of non-medical workers. The principal address at the evening public session was delivered by Miss Grace Abbott, the chief of the Children's Bureau in Washington, who made an earnest plea for the maintenance of the resources of child welfare organizations of all types to meet the crisis of the coming winter. A very large part of the program of the sectional meetings was devoted to such problems as the coordination of various types of child health work, education of the public in the needs of child hygiene, and the problems and opportunities of lay directors of private organizations working in this field.

### Its Place in The Program

In regard to the question of coordination of activities, Dr. Haven Emerson made an effective presentation of the admirable work accomplished by the Babies Welfare Federation and the new Harlem Health Center in New York, and at a later session some of the more knotty problems were debated in detail. There is as yet no agreement on the question whether child hygiene work should be organized as part of a program for child welfare or as a part of the program for community health—on the question whether public health

nursing in a city or state health department should constitute an independent bureau, or should be distributed in various other divisions—or on the question how the development of a state medical program of child welfare can be justly and wisely coordinated with the work of the private practitioner of medicine. Dr. Champion of Massachusetts made a strong plea for a division of child hygiene under a state department of health with purely advisory functions, and Miss Margaret K. Stack of Connecticut presented effective arguments for the organization of public health nursing work in a separate division of nursing, but the final answer to such questions is still far to seek.

In the discussion of health education Mrs. Arnold Gesell presented a brilliant and stimulating discussion of the weaknesses of public health education at the present day and the fundamental reactions of the child mind upon which such education should be based. A special round table discussion was devoted to rural problems, another to the special problems of directors of divisions of child hygiene, and one general session was devoted to the child of pre-school age.

The medical session held at the New Haven Hospital was of very special interest. Dr. Robert B. Osgood of Boston, contributed a convincing presentation of the evidence in regard to the effect of faulty posture on alimentation and elimination

1. The papers by Dr. Shaw and Dr. Osgood will appear in early issues of THE NATION'S HEALTH.

and its association with joint symptoms, cerebral symptoms, asthenia and underweight. Dr. E. A. Park of the Yale School of Medicine summarized the evidence in regard to the effect of sunlight and ultraviolet rays in curing rickets and presented striking new data in regard to this problem; and Dr. F. G. Blake, of the Yale School of Medicine discussed measles and its prevention and de-

scribed the very promising experiments carried on in his laboratory looking toward the preparation of a serum for this disease.

The meetings at New Haven were among the most successful in the history of the organization and the acceptance of the presidency for 1921-22 by Mr. Herbert Hoover is a testimony to the unique importance of its work.

## A Defect in the Copyright Law

BY JAMES MOORES BALL, M.D., ST. LOUIS, MO.

OUR present copyright law, which contains many excellent features, was introduced as "An Act to Amend and Consolidate the Acts Respecting Copyright." It was approved March 4, 1909, and went into effect July 1, 1909. It has been amended three times: March 2, 1913; March 28, 1914; and December 18, 1919.

Under its provisions he who first sends to the register of copyrights, in care of the Librarian of Congress, Washington, D. C., two printed or typewritten copies of a proposed publication, enclosing therewith the legal fee, is granted the copyright whether or not he is the author of the proposed work. This is the expeditious, and possibly the only feasible way to transact a vast volume of business. In case of fraud, the aggrieved party can take his case to court with a chance for justice.

### An Inherent Defect

The law has one defect, in that it does not prohibit the printing of a date on the title page different from that of the copyright.

Section 19 of the original Act says: "That the notice of copyright shall be applied, in the case of a book or other publication, upon its title page or the page immediately following." It does not say that the title page, if it bears any date, shall bear an honest date, *viz.*: that of the year of granting the copyright.

Owing to the existence of this loophole, a few unscrupulous publishers are able to dispose of their left over wares of an earlier vintage. The busy physician, looking at a title page dated 1921, naturally would think that he is ordering an up-to-date volume. Some salesmen will go so far as to say, "This is the latest edition." Of course, although printed five years before (as the copyright date shows), it is "the latest edi-

tion." The manuscript for a new edition, on which the author has worked for many months, rests peacefully in his bedroom, within easy reach; so that any new idea, arriving possibly at the time of the crowing of the cock, or at the unholy hour when the milkman treads his weary way, may be set down.

The title page date is a fraud, unless it is the same as that of the copyright. The copyright date always should be looked for. It has to tell the truth. Such is the law. It is to be regretted that there is not another law making it a crime for a publisher to use on the title page a date different from that of the copyright.

And what recourse has the author, who, having permitted his publisher to secure the copyright, finds that the child of his (the author's) brain is placed in the class of illegitimates? At present, none.

The author's friends, not understanding the sharp methods of a publisher, may condemn him without a hearing. The author, as recently occurred to our own discomfiture, may learn of the spurious edition only when members of his profession, residing in distant cities, write letters of condemnation so filled with sulphur and brimstone as to cause the recipient to wonder that the mail bags did not burn *en route*.

Wherefore, the copyright law needs to be amended so that, if the title page bears a date, it must be an honest one, in that that of the year of the granting of the copyright.

The writer proposes (D.V.) to see that the law is amended. He asks that the organized medical profession, the various societies of allied sciences, and all honest publishers, aid in the movement.

At the writer's request, the Honorable Selden P. Spencer, junior United States Senator from Missouri,

introduced on November 15, 1921, a bill (S. 2727) to amend section 19 of the copyright law, so that hereafter the title page date must tell the truth. The proposed amendment is as follows (the new, or added, part is in italics):

Sec. 19. That the notice of copyright shall be applied, in the case of a book or other printed publication, upon its title page or the page immediately following. *Provided, That wherever a date of publication or of issue appears, the notice of copyright shall also appear, or if a periodical either upon the title page or upon the first page of text of each separate number or under the title heading, or if a musical work either upon its title page or upon the first page of music: Provided, that one notice of copyright in each volume or in each number of a newspaper or periodical published shall suffice, except as herein provided.*

The bill has been referred to the Committee on Patents, whose personnel is as follows: Hiram W. Johnson, California (Chairman); George W. Norris, Nebraska; Frank B. Brandegee, Connecticut; Richard P. Ernst, Kentucky; Ellison D. Smith, South Carolina; A. Owsley Stanley, Kentucky; Edwin S. Broussard, Louisiana.

These gentlemen can be reached by addressing communications to Senate Office Building, Washington, D. C.

How long a bill will remain in committee ordinarily is an unanswerable question. If, however, the physicians of the country grasp this opportunity to advocate an amendment which is founded on right, an early hearing will be obtained. The proposed legislation, if written into the law, will not harm any honest man. It is of constructive, not destructive character. Members of the medical profession now have an opportunity to aid in the correction of a long-standing abuse. Will they rise to the occasion?

### Social Hygiene and Eugenics

In recognition of the second International Congress on Eugenics, held in New York during September, the July issue of *Social Hygiene* is devoted largely to the consideration of eugenic questions. Among the articles appearing in this issue are the following: "The Distribution of Wealth, as a Eugenicist Sees It," by R. H. Johnson; "Some Disgenetical Effects of the War in Italy," by Marcello Boldrino; "Eugenics in the Central Empires since 1914," by Prof. Geza Von Hoffman; and "The Sins of Industry Against the Race," by Herman Lundborg.

# A Summary of Recent Health Legislation

BY DOROTHY KETCHAM, CHICAGO

THE publication of the various state laws enacted during the legislative sessions of 1921 is not yet complete. In consideration of the great mass of health and safety legislation enacted, it will be possible here only to summarize briefly and by topics those provisions which have been enacted in the various states. Only the legislation of 1921 has been included, so that reference will be made to the chapter or page of the session laws, acts, or resolves. The following states have to date published their session laws, so that a more detailed summary has been made of their provisions: Arizona, Hawaii, Idaho, Illinois, Indiana, Kansas, Massachusetts, Minnesota, Nevada, North Carolina, Oregon, South Dakota, Utah, Vermont and Washington. In the remaining states legislation is cited by title: Arkansas, California, Colorado, Connecticut, Delaware, Florida, Georgia, Maine, Michigan, Montana, Nebraska, New Hampshire, New Mexico, New Jersey, New York, North Dakota, Ohio, Oklahoma, Pennsylvania, Rhode Island, South Carolina, Tennessee, Texas, West Virginia, Wisconsin and Wyoming. *The Index to State Legislation, 1921*, a bulletin of the Public Affairs Information Service, published September 17, 1921, is issued as a basis for discussion.

**Abattoirs.**—California C. 732 provides for the sanitary inspection of slaughter houses and the inspection of animals or meats intended for human consumption. Wisconsin has prohibited the business of slaughtering on the banks of any stream or in any place where a slaughter house is not provided.

**Anthrax.**—Oklahoma C. 216 makes an appropriation for prevention and eradication of anthrax among the other contagious and infectious diseases of animals.

**Baking Industry.**—California C. 701, North Carolina C. 173, and Texas C. 63 regulate and prescribe the sanitation of buildings, the character of baking products, the cleanliness of receptacles, etc. The North Carolina law is herein summarized:

Every room or other place occupied or used as a bakery for the preparation, production, storage, or display of bakery products intended for sale for human consumption, shall be clean, properly lighted, and ventilated. Floors, walls, and ceilings are

to be kept and maintained in clean and sanitary condition, and all openings are to be screened, adequate drainage and suitable wash sinks to be provided. Toilets are to be well ventilated and kept in sanitary condition. Tables, shelves, and implements to be cleaned daily and refuse removed daily. Work rooms are not to be used as sleeping or living rooms. Employees are not to sit or lie on the tables. Hands and arms to be washed thoroughly before preparing or mixing ingredients. Tobacco is not to be used in any form. Adulterants and stale products are not to be sold.

**Barbers.**—Minnesota, C. 424, Missouri, S. B. 318, and Texas, C. 79, have created boards of barbers' examiners to license barbers and to prescribe rules and regulations to prevent the spread of infectious or contagious diseases. Texas includes beauty shops in "those engaged in the business, occupation or employment of caring for, dressing, adorning, and beautifying the human hair, face, scalp, hands, and skin."

**Blind and Blindness.**—Missouri H. B. 70 has provided pensions for the adult blind under certain restrictions of residence and dependency. Arkansas No. 525, Connecticut C. 236, and North Carolina C. 152 provide for the care, maintenance and instruction of children too small or backward to enter the state school for the blind; for the education of certain groups in their homes; and provides aid for the necessary expenses of blind students in universities, colleges, and conservatories of music.

Connecticut C. 242, Delaware C. 42, Idaho C. 233, Missouri S. B. 98, Nevada C. 230, Oklahoma C. 4, and Texas C. 89, prescribe the use of prophylactic solution in the eyes of the newborn and the reporting of its use, or the development of inflammation, to the boards of health.

**Canning Industry.**—Idaho C. 223, p. 511, makes the following regulation of the canning industry:

All matters and things relating to the sanitation of factories or establishments, and cold storage plants in which foods and food products of vegetables, fruits, meats, or by-products thereof, are manufactured, evaporated, dehydrated, preserved, pickled, handled, kept in cold storage, or placed in jars of tin, glass, wood fiber, or other containers, are under the supervision of the Department of Public Welfare.

All rooms in which the manufacturing is carried on are to be provided with smooth water-tight floors

which can be cleaned, and all walls, partitions, and ceilings are to be cleaned, painted, or whitewashed, and kept in sanitary condition, and insaniitary equipment is to be replaced with suitable equipment and material. The rooms are to be properly ventilated, free from odors, and provided with suitable cuspidors. All euter windows and ventilators are to be screened against flies and insects. All utensils and machines used in the process of manufacture of food products are to be thoroughly cleaned before and after being used, and surroundings to be kept in a clean and sanitary condition, the waste not to accumulate. Hot and cold water is to be provided and only pure water and ice are to be used in the preparation of food products. Toilet rooms are to be provided.

**Children.**—Arizona C. 53, and Delaware C. 63, establish state child welfare boards. Connecticut by C. 383 provides for the licensing of boarding houses for children by the new bureau of child welfare; by C. 381 regulates county homes for children; and by C. 81 amends a previous law by increasing the penalty for cruelty to persons—children. Connecticut C. 265, has also provided for the physical and mental examination of children before their commitment to a county temporary home. Missouri S. B. 224 provides for the licensing, regulation and supervision of boarding houses for infants or children and the placing of children. In South Dakota C. 112 provides for child welfare boards in each county, consisting of two women appointed by the State Child Welfare Commission, the county superintendent of schools, the county superintendent of health and the county judge. These people make such visits as the state commission requires, and they act in a general advisory capacity to the county and municipal authorities dealing with questions of dependency, delinquency, and social conditions. Massachusetts C. 360 presents the school term and curriculum, including in enumerated topics the teaching of physiology and hygiene, indoor and outdoor games, athletic exercises and an explanation of the effect of alcoholies, narcotics, etc. Vermont, No. 217, places upon the Board of Charities and probation the duty of furnishing medical and surgical aid to physically defective and crippled children, if such parents are willing but unable to furnish the necessary treatment.

**Chiropractic.**—Arizona C. 118, Ar-



kansas No. 485, Georgia H. B. 86, New Hampshire C. 150, New Jersey C. 136, New Mexico S. B. 101, Oklahoma C. 7, and South Dakota C. 143, authorize and regulate the practice of chiropractics. New Jersey abolished the State Board of Chiropractors, and added a chiropractor to the State Board of Medical Examiners, which is given power to license chiropractors or other special methods of healing.

*Cleaning and Dyeing Industry.*—Indiana, by C. 172, has provided that no room or structure shall be used for the business of dry cleaning or dry dyeing, until application for permission is filed and approved by the State fire marshal. On such application the State Fire Marshal or his deputies or assistants, is to inspect the premises before issuing permits. The permits are to be displayed by the establishments.

The rooms are to be of fire-resisting design and construction, the buildings not more than one story in height and without cellar or open space below the first floor. Specifications are made for walls and ventilation, for the protection of steam pipes, fire extinguishers and settling tanks, the location of engines and lighting and heating equipment.

Minnesota, by C. 459, has enacted a law quite similar to that of Indiana. Dry cleaning and dyeing establishments are to be licensed by the State Fire Marshal after application to do so has been filed with and approved by him. Permits are not to be issued for more than a year and may be refused, suspended, or revoked. All buildings must be fireproof, not exceeding three stories in height, and shall be without basement, cellar, or open space below the ground floor, the workroom where all dry cleaning is done is to be located on the ground floor. Construction is to be of stone, cement, etc., without sewer connection, and a cement pit is to be provided for liquids. The ventilating system prescribed is to be such as will completely change the air every five minutes.

Skylights and windows are to be of wired glass set in steel frames, stationary, and for lighting purposes only. All windows to close automatically at 120 degrees F., and are to be covered with wire screens. Fire extinguishers are to be provided and steam or hot water pipes protected. The machinery is to be specially constructed, as are heating, lighting, storage tanks, underground tanks, pumps, with separate buildings for gas.

*Cold Storage.*—New Jersey C. 71 prohibits the alteration or destruction of labels on packages showing the time food was placed in cold storage. Wisconsin C. 520 provides for the branding of cold storage products.

*Examination and Criminal Identification.*—Nebraska No. 482, Ohio S. B. 53, and South Dakota C. 186 provide means of criminal identification by authorizing the taking and preservation of photographs, measurements, etc. Pennsylvania No. 208 requires that persons sentenced to penal institutions are to be examined physically and mentally and in proper cases may be segregated.

*Dairy Industry.*—Arizona C. 93 and Idaho C. 188 regulate the sale of imported meats, poultry, eggs, and butter, requiring the same to be labeled. Florida C. 8534, Kansas C. 276, Minnesota C. 495, Nevada C. 167, North Carolina C. 169, and Wyoming C. 85 regulate the sale and adulteration of milk, cream, ice cream, etc., establishing standards and requiring licenses. Minnesota C. 306 requires common carriers to establish and maintain clean and sanitary storage rooms for the reception of milk, which are to be licensed and inspected, Missouri H. B. 469 prohibits unfair discrimination in the purchase of milk, cream, butterfat, butter, eggs, and poultry.

*Day Nurseries.*—In Oregon C. 46 a day nursery is defined as an institution "in which are commonly received at one time three or more children not of common parentage, under the age of fourteen years" for periods of from four to twelve hours. The State Board of Health is to grant licenses for their conduct on sworn application containing required information, all licenses to expire at the end of a year. The State Board of Health is to make rules and regulations concerning the licensing and conduct of day nurseries and may by its agents inspect the same at any time, each to be inspected and visited at least once a year. On thirty days' notice the license may be revoked "if in its judgment public interest so demands."

*Defective Children.*—In Connecticut, by C. 30, any town, city, or borough may enact or amend charter provisions providing for the medical care and treatment of children of compulsory school age whose education is retarded by reason of physical defects, and by C. 335 the State Board of Education is to appoint a director of special education and standards to encourage special provision for children below standard phys-

ically or mentally. Rhode Island C. 2027 regulates the granting of working permits to backward children.

*Defectives.*—Arizona S. C. R. 3 requests the National Committee on Mental Hygiene to conduct a mental deficiency survey of all state, county and city institutions as well as the public schools.

*Dental Hygiene.*—California C. 412 establishes a division of dental hygiene for children under the direction of the state board of health.

*Eggs.*—The inspection and certification of imported eggs and egg products for human consumption is provided by California.

*Feeble-Minded.*—South Dakota C. 232 adopted the uniform act for the extradition of persons of unsound mind and also created (C. 235), a state commission for the control of the feeble-minded. The purpose of the Act as stated is "that all feeble-minded persons resident within the state shall become wards of the state and shall be kept segregated to the end that they shall not produce their kind." The Commission has power to promulgate rules and regulations and survey institutions.

*Food and Food Handlers.*—South Dakota C. 242 provides that every building, room, basement, inclosure or premises, occupied, used, or maintained as a bakery, confectionery, cannery, etc., for the preparation, manufacture, packing, storage, sale or distribution of any food intended for sale is to be properly and adequately lighted, drained, plumbed, and ventilated "and shall be conducted with strict regard to the influence of such conditions upon the health of the employees, operatives, clerks, or other persons therein employed and the purity and wholesomeness of food therein produced."

Floors, side walls, ceilings, furniture, receptacles, implements and machinery of every such establishment or place where food is produced, and all vehicles, etc., shall at no time be kept or permitted to remain in an unclean, unhealthful, and insanitary condition, to be of tile, etc., doors and windows to be screened, and toilet rooms and cuspidors provided.

Pennsylvania No. 169 requires employees handling food to have and produce doctors' certificates, while Texas C. 66 states that persons, firms, or corporations which operate or conduct hotels, cafés, restaurants, dining cars or other public eating places, bakeries or meat markets, shall not work, employ or keep in their employ any person who is affected with any contagious or infectious disease.



*Fruit Industry.*—California C. 719 amends an earlier law which relates to the establishment of standards and standard packages for certain fruits, nuts and vegetables, to prevent deception in packing and to provide for their certification presenting penalties for violation.

*Hospitals.*—Connecticut C. 82 passed a general law concerning the defrauding of general hospitals, and Maine C. 112 to control the establishment of sanatoriums and hospitals for infectious and contagious diseases within the populous districts of cities and towns. Idaho C. 57 and Missouri S. B. 152 regulate the licensing and inspection of maternity hospitals. State, city, and county institutions are specifically exempt in Missouri. Texas C. 76 requires an annual license and fee from every individual, firm, association, or corporation owning, keeping, conducting, or managing an institution, a home for the boarding or sheltering of infant children, or so-called "Baby Farm" or any lying-in hospital, hospital ward, maternity home, or other place for the reception, care and treatment of pregnant women, charging a fee or receiving or expecting compensation.

*Hotels.*—North Carolina C. 186 provides for the sanitary inspection and conduct of hotels and restaurants: In all cities, towns, or villages where a system of waterworks and sewerage is maintained for public use, every hotel therein accessible to water main and sewer main shall be equipped within six months after passage of Act with water closets. Lights are to be provided in water closets and doors to windows are to be screened against flies. Such fly paper and fly traps are to be used as "necessary to keep their restaurant, kitchen, and dining room reasonably free from flies." Beds and furniture are to be kept free from vermin. Clean towels are to be supplied each guest and tableware and the kitchen utensils to be washed after using.

*Housing.*—California C. 354 passed the State Housing Act which regulates the erection, construction, reconstruction, moving, alteration, maintenance, use, and occupancy of tenement houses, hotels, and dwelling houses in incorporated towns, cities, and counties. Iowa H. file 794 regulates the issue of building permits by a building commission or department. Indiana, by amending an existing law, created a new division in the State Board of Health, the Division of Housing, with an appropriation of \$15,000.

*Ice Cream Industry.*—Florida C. 8534, Kansas H. B. 199, North Carolina C. 169, and Ohio S. B. 105 license and regulate the sanitary conditions of the ice cream manufacturing concerns, the cleansing of utensils, the method of obtaining tests and other sanitary standards are prescribed.

*Industrial Cripples.*—Arizona C. 78, California C. 758, Idaho C. 441, Indiana C. 204, Massachusetts C. 462, Michigan No. 211, Missouri H. B. 494, New Mexico H. B. 161, North Carolina C. 172, Ohio H. B. 218, Pennsylvania No. 4, Rhode Island 2031, Utah C. 97, Wisconsin C. 534, and Wyoming C. 109 and 110, accepted the benefits of the Vocational Education Act of the Federal Government relating to persons disabled in industry. Plans for cooperation between the state and federal boards are to be formulated, courses are to be provided and training supervised. North Carolina specifies that not more than ten dollars a week is to be paid to any one person. Georgia, Iowa, Maine, Montana, and West Virginia also by legislative enactment adopted the provisions of the law, some sanctioning the action of the governor already accepting same. Minnesota and Nevada accepted in 1919, Alabama, New Jersey, New York, North Carolina and South Dakota in 1920.

*Juvenile Delinquents.*—Nebraska H. roll No. 84 provides for a clinical psychologist under the supervision of the Board of Control, and Wyoming C. 159 for the mental examination of all juvenile delinquents committed to the state institutions.

*Maternity Benefits.*—Minnesota C. 392 through the State Board of Health plans to give advice and instruction to expectant mothers during pregnancy. New Hampshire C. 151 and New York C. 420 provide for the protection of the public health by prenatal, maternity, and infant care.

*Meat.*—Arizona C. 93, California 688, Idaho C. 188 and Wyoming C. 80 provide for the proper labeling, handling and sale of imported meats, eggs, poultry, and butter. The sale of such goods is to be indicated by the display of a sign in their place of business.

*Mental Hygiene.*—Hawaii Act 140 has established a psychological and psychopathic clinic which shall undertake to investigate the nature, causes, treatment and consequences of mental disease and defect within Hawaii. It is established with the power of management and control vested in the board of regents of the

University of Hawaii, the Board to employ competent persons to have charge of the clinic, conduct investigations, publish results, and give lectures and instruction pertaining to mental disease and defect with the approval of the Board of Regents.

*Midwives.*—Delaware C. 43 authorizes the state board of health to employ a nurse to educate and supervise the midwives of the state.

*Milk.*—Delaware C. 36 to prevent fraud and deception in the weighing and testing, buying and selling of milk and cream, provides for the examination and appointment of certified testers and the issuing of licenses and the making of tests. Iowa H. file 361 authorizes cities and towns to license and regulate milk dealers and establish standards for milk and cream. Massachusetts C. 45 requires the marking and sealing of cans and containers used in the wholesale distribution of milk or cream. Ohio H. B. 146 amends a previous law relating to the sale of pure milk, skimmed milk and standardized milk. Rhode Island C. 2070 establishes a new milk standard giving cities and towns the power to regulate the sanitation of milk. Wisconsin C. 409 fixes standards for the prevention of fraud in the sale of milk and C. 467 defines and fixes standards for condensed, evaporated, concentrated, sweetened condensed, sweetened evaporated, and sweetened concentrated milk.

*Nurses and Nursing.*—Arizona C. 70, Indiana C. 182, Kansas C. 267, Missouri S. B. 380 and Utah C. 130 altered the provisions governing the registration of graduate nurses. Indiana and Missouri specify the qualifications for licensed attendants, and Utah gives to the Department of Registration the power to appoint an inspector of hospitals and training schools for nurses.

*Occupations.*—Utah C. 130 has created a department of registration with power to exercise the duties of the state board of barbers' examiners, the dental examiners, medical examiners, nurses, optometry, pharmacy, and others. This department conducts hearings, examinations, etc., and issues certificates and licenses. Washington C. 67 in its administrative code has specified a director of licenses to perform all the duties vested in the barbers' examining board, the State Board of Chiropractic Examiners, the State Optometry Board, the Board of Osteopathic Examiners, the State Board of Pharmacy, and others. Wisconsin requires all public health nurses and public health instructors to register with

and be certified for employment by the State Board of Health.

*Optometry.*—Connecticut C. 276, Florida C. 8580, Missouri S. B. 333 and Utah C. 86 regulate the practice of optometry requiring the issue of licenses and specifying qualifications.

*Osteopathy.*—Florida amending C. 5946 of 1909, Hawaii Act 14, Oklahoma C. 30 and Washington C. 82, authorize the practice of osteopathy after the securing of a license. Hawaii and Oklahoma create boards of examiners specifying the qualifications to be demanded. Washington amends a previous law concerning the reciprocity and revocation of licenses and requires further that no license is to issue to any person who has failed in examination without re-examination.

*Physical Education.*—Connecticut C. 399 provides for health instruction and physical education in the public schools. Massachusetts C. 360 makes similar provision.

*Pillow Industry.*—California C. 92 regulates the making, remaking and sale of pillows, requiring that materials used therein shall be accurately described and presenting the manner in which they shall be labeled.

*Public Comfort Stations.*—Illinois P. 445 amended its law relating to wash rooms in certain employments requiring that they shall be so arranged that employees may change their clothes therein, shall be sufficient for the number of persons employed, and shall be equipped with lockers, hangers, hot and cold water, etc. Minnesota C. 294 requires villages and cities of the fourth class to provide public comfort stations with toilet and lavatory facilities near the business center. Rest rooms are to be free and to be kept in a neat and sanitary condition with suitable toilet facilities for women and children. These rest rooms may be in hotels or public buildings. Wisconsin has extended the public comfort station act to give governmental units the option to provide comfort station and rest room facilities in camp sites and other places of public assemblage. Five thousand dollars was appropriated for their supervision.

*Public Health.*—Illinois has provided for approximately twenty-five state health officers to be known as district health superintendents. Texas passed five bills relating to public health of which not one carried an appropriation for enforcement. Utah C. 58 requires the Secretary of the State Board of Health and his deputy or deputies to inspect during business hours (a) office equipment, tools,

instruments, laboratories, linen, and supplies of all medical practitioners, dentists, barber shops and barber schools; (b) all pharmacies, dispensaries, stores and places where drugs, medicines or poisons are compounded, dispensed or retailed.

Inspectors are to have free access to such places and to report in writing to the Director of the department of registration on such inspection, a copy to be sent to such person responsible for the condition and on refusal to put premises in a clean condition the license may be revoked.

The State Board of Health has power to adopt reasonable rules and regulations prescribing the sanitary requirements of medical practitioners, dentists, barber shops and barber schools, copies thereof to be printed and sent to each registered medical practitioner, dentist, and proprietor or manager of a barber shop or barber school.

Vermont C. 100 authorizes towns and incorporated villages to appropriate money for a resident physician or nurse.

*Public Health Nurses.*—Michigan authorizes the employment and compensation of public health nurses by townships. New York C. 130 empowers the board of supervisors in counties not having a tuberculosis hospital, to appoint and employ such public health nurses as the board may deem proper, and by C. 263 they may organize and operate clinics for the medical examination of persons who are or may be suffering from tuberculosis.

*Recreation.*—Ohio S. B. 81 enables cities, villages, or counties to acquire, maintain and operate playgrounds, play fields, gymnasiums, public baths, swimming pools, and indoor recreation centers and authorizes school districts to join in the maintenance and operation of such activities. Utah C. 57 regulates the cleanliness of swimming pools and provides for their licensing and inspection.

*Restaurants.*—North Carolina C. 186 providing for the inspection and conduct of hotels and restaurants has been reviewed. Iowa C. 199 provides that every building or structure kept, used, advertised or held out to the public to be a restaurant, cafe, cafeteria, dining hall, lunch counter lunch wagon, or place where food is served for pay to the public, except those used not more than one day in any week by churches, fraternal societies and civic organizations is termed a "restaurant" within the meaning of the Act. Before January 1 of each year application for

license is to be made to the Inspector of Hotels. Blanks, information required, etc. Every restaurant except those temporary in location and character, situated in a town having a system of sewerage shall be thoroughly drained, constructed and ventilated according to approved sanitary principles, to be kept and maintained in a clean and sanitary condition, free from odors, etc.

Utensils and places where food is kept or prepared is to be kept and maintained in a sanitary condition, and the use of soiled or insanitary tableclothes, napkins, or other tableware is prohibited.

*Safety Devices and Measures.*—Massachusetts C. 50 has amended its previous laws concerning hoods, hoppers, and suction devices on emery wheels for the reception of dust. These devices and connections are to be suitable and efficacious and approved by the department of labor.

Minnesota C. 113 requires employers to furnish helmets to employees engaged in any occupation or process of employment in which there is danger of serious injury to the eyes. The employees must wear such helmets and the design and material of the helmets is to be approved by the Commissioner of Labor.

*Sexual Diseases.*—Hawaii C. 200 established a venereal clinic in Honolulu under the direction and control of the territorial board of health and which is to be free to all residents of Honolulu.

Idaho C. 200 requires the reporting of venereal disease by any physician or other person, superintendent or manager of a hospital, dispensary, charitable or penal institution to the State Department of Public Welfare. State, county, and municipal health officers or their authorized deputies "when in their judgment it is necessary to protect the public health" may make examinations or cause examinations to be made of persons reasonably expected to have the disease. Prisoners are to be treated and the Department of Public Welfare is to make rules and regulations.

Idaho C. 201, Nevada C. 221, Pennsylvania No. 23, Vermont C. 213 prohibit the advertisement of cures of venereal diseases and certain sexual disorders.

South Dakota C. 339 permits state, county, and municipal health officers or their deputies to require persons infected with venereal diseases to report to a reputable physician and to continue treatment. Sources of infection are to be investigated and persons in a communicable state to be quarantined.

In Indiana C. 38 the fact that a person has a venereal disease does not act as a bar to any benevolent, charitable, penal and reformatory institution maintained in whole or in part by state funds. It is the duty of the official or superintendent in charge of such institution to institute and provide proper treatment and to carry out such laboratory tests as might be necessary to determine the nature, course, duration, and results of such treatment. The services of the laboratory of hygiene of the State Board of Health shall be available without charge for such laboratory diagnosis and tests as may be necessary. The State Board of Health is to cooperate in every reasonable way to prevent and suppress venereal diseases.

Pennsylvania No. 150 authorizes the department of health to make rules and regulations with regard to the examination of inmates of penal institutions suspected of suffering from venereal disease, and Rhode Island C. 2081 enacted a general law for the prevention and treatment of venereal disease. Pennsylvania has designated the state hospital for the chronic insane as a hospital for people suffering from syphilis.

*Sewage Disposal.*—New Jersey C. 46 regulates the discharge of effluents from sewerage systems or works into a potable water supply.

*Swimming Pools.*—Utah C. 57 provides that the State Board of Health has supervision over the sanitation, healthfulness, cleanliness and safety of public swimming pools, bath houses, swimming and bathing places and all related appurtenances, and the board is empowered to make and enforce such rules and regulations pertaining thereto as it shall deem proper.

It is unlawful to construct same without permit from the board of health; application to be filed stating sources of water supply, disinfection, heating, safety, etc., and all other information required by the state board of health.

*Tuberculosis.*—New Hampshire C. 194 by joint resolution provides for and regulates the treatment of persons in the advanced stages of tuberculosis.

In North Carolina C. 178 by amending a previous law it is provided that the county commissioners of any county may erect and maintain county tuberculosis hospitals. Wyoming C. 169 establishes a state institution known as the "Wyoming Tuberculosis Sanatorium."

*Water Pollution.*—Connecticut C.

395 creates a commission to investigate the pollution of streams. Kansas S. B. 118 seeks to prevent the pollution of water by oil, salt water, or refuse escaping from well drilled for oil or gas, and Rhode Island C. 2090 to prevent the pollution of the rivers and harbors of Narragansett Bay.

*Workmen's Compensation.*—Arizona C. 103, Connecticut C. 306, Delaware C. 186, Illinois P. 444, Maine C. 222, Massachusetts C. 310, Minnesota C. 82, Missouri H. B. 73, Nevada C. 161 and 218, New York C. 121 and 539, Ohio H. B. 47 and 378, Oregon C. 311, Pennsylvania No. 67, Rhode Island 2095, South Dakota C. 419 and 420, Utah C. 67, Washington C. 182, and Wisconsin C. 414, have extended or altered the provisions of the workmen's compensation acts. Arizona created a commission, altered schedules, etc. Illinois and Ohio specify that disability from occupational disease is to be treated as within the Workmen's Compensation Act. In Massachusetts reports of medical examinations under the compensation laws are to be filed with the Department of Industrial Accidents. Minnesota has recodified the law as has Missouri, the latter subject to approval by the people, November, 1922. Nevada C. 218 includes voluntary firemen in the Act. Oregon changed the schedule of ratings. South Dakota increases the rate to widows and children, C. 419, and makes it possible for a widow with children to secure the compensation allowed without waiting for the appointment of an administrator. Utah makes certain changes in the schedule and general scope of the law and provides, as does Missouri, that the obstruction of treatment or the unreasonable refusal of operation may work forfeiture of compensation. Washington has made the law applicable to public contract work (state, county or municipal corporations) engaged in extra hazardous work. The ratings and scope are changed also.

### Bureau of State Welfare Organized

Dr. John M. Baldy, state commissioner of welfare, Pennsylvania, announced that the new welfare department would be organized with four different bureaus to look after different phases of state charitable work and named the following as directors of three of the bureaus: Dr. Ellen C. Potter, now with the state department of health, will be director of the Bureau of Children;

Bromley Wharton, who was secretary of the State Charity Board, will be director of the Bureau of Assistance, which will look after the state's charitable and benevolent work in hospitals and institutions; and E. J. Lafferty, member of the State Prison Labor Commission, will be Director of Rehabilitation, which will deal with rehabilitation work among the inmates of penal institutions. The director of the bureau of mental health, which is provided by legislative enactment in the measure creating the welfare department, has not been selected. The activities of the Bureau of Mental Health are to be devoted to perfecting and expanding the dual (state and county) system of caring for the insane, of expanding the activities of the state in the line of feeble-minded, and of starting an active and studied campaign of education with the object of leading to the future state care of these wards of the state. The Bureau of Children will have as its object not only standardization of all institutions caring for children, but shall aim to house as many children as possible in families rather than in institutions. The policy already has been adopted by the state in establishing the mothers' assistance fund.

### Cancer in Germany

The statistics for the years 1914-1918 have recently been published and show that there has been no appreciable increase in recent years. In men the number has actually declined, from 23,494 in 1914 to 21,804 in 1918. In women there has been a slight increase, from 28,694 to 29,631. In 1904 the total average was 6.2 per 10,000, in 1913, 8.2. No regular laws can be deduced from these findings as in some districts the cancer mortality has advanced and in others declined during the years in question.

### Directory of Child Health Agencies

A directory of child health agencies in the United States has recently been compiled and published in multi-graph form by the United States Children's Bureau. The directory lists the agencies according to states and furnishes information on the date of organization, the nature of the program, size of staff, name of executive, and form of support. It is planned to print this directory in more permanent form as soon as the data have been verified.

# THE NATION'S HEALTH

(Continuing MODERN MEDICINE.)

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## Medical Representation in Legislative Matters

THE report in a recent issue of the *Boston Medical and Surgical Journal* of the work of the Joint Committee on State and National Legislation is an illuminative statement both as it emphasizes the need of leadership in civic matters on the part of medical men and as it brings out the wide range of interests in which this leadership is called for.

Authority is generally conceded to professional opinion in technical matters and on issues of more or less minor importance pertaining to foods and beverages, the control of narcotics and poisons, or on moot questions relating to disease; but a surprising and inexplicable opposition to expert guidance is often encountered in legislative and popular opinion on such scientific issues as vaccination, for instance, or physical education, or maternity aid. The wide variation of opinion on matters of this kind which, if formed rationally, must be considered on basis of fact, not prejudice, brings out the increasing need of popular education on health matters as well as the necessity for the active participation of the medical profession in the formative processes of public opinion.

It must be admitted that in the past not only has the profession as a class stood somewhat apart, but it has never clearly and consistently stated its own case. Science has, therefore, become effective more or less indirectly and this

is to be considered in accounting for both the emphases and the gaps in health legislation.

That the public is not disinterested in medical and health matters is sufficiently proved by even the most cursory survey of recent health legislation, a summary of which is presented on another page of this issue. The first impression gained from a reading of this article is the wide range of matters covered by health legislation, and the large number of states and territories which are concerning themselves with measures looking toward health conservation. A general interest is manifested in licensing laws. Many of the newer laws have seen to it that wash rooms, with hot and cold water supply, are available in all industrial plants. Food laws are enacted with a precision of detail in regard to food factories, food handling, etc., that might seem to leave too little to the discretion of departments of health inspection. Georgia and North Carolina, particularly, have given marked attention to food laws.

We have in these acts another instance of adequate health ruling without the necessary provision for making it effectual in the legislation of Texas with no appropriation to carry it out. The whole accomplishment, however, is encouraging, for we see appropriations for health increased when the general tendency is in the opposite direction; we see simplification and coordinations replacing the cumbersome machinery of the past. We have a right, then, confidently to expect a higher order of efficiency and of productivity, general throughout the country and cumulative in its constructive work.

## Winning the Business Man to Health Activities

WHEN officials seek public approval for deeds accomplished, they go to the business man; when politicians plan a coup of any significance, they consult the business man; when people are called on to vote bonds for needed improvements, they follow the business man. If public health work is to be impressed on the community's conscience, to become a live and functioning part and parcel of our daily lives, why not sell it to the business man? If we expect the Federal Congress, state legislatures, and local governing boards to grant questions of public health the same consideration now given to matters of less import to the common weal, we must win over the business man.

This is an industrial era. Industry can make war and end it. It can decide the fate of nations and people. Similar influence of business can be felt down to the lowliest community. Such a condition need not be considered a handicap to public

health advancement. Our mode of attack needs to be changed so that the present liability can be converted into an asset.

Business men are practical and expect adequate returns on any investment. If the health officer can demonstrate,—not only to his board or council—but to the business man, that by adopting certain measures, definite saving of lives and dollars have resulted, that better health of employees means greater efficiency in the plant and consequent increased profits, that better health of the citizenship means less poverty, and more money for the purchase of necessities and luxuries, that good municipal sanitary conveniences invite high class residents and new capital, then that same acumen and genius of business organization will be found in the support of the public health campaign. Health officers have been addressing themselves to a small select group and then wonder when popular support was not forthcoming.

Organized business leadership in the form of Rotary Clubs and Chambers of Commerce are beginning to evidence keen interest in the health movement. Rotary Health Week, observed in 1920 by Rotary Clubs throughout the United States by special health programs, will be repeated this December. Other clubs have shown similar interest and this should be encouraged. Insurance companies are taking an active part in the health campaign and private organizations of business men such as the Public Health Institute of Chicago, are leading the way in constructive public health work.

Business men should attend health conferences and every civic and business organization should be officially represented so they can become informed of the latest advances in the health campaign. Likewise health workers should aim to attend business gatherings to carry their message to business leaders. Public health work will be better supported morally and financially whenever the business interests are educated to its usefulness and won over in that way.

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## Health Correlates with Habits of Thrift

**M**ORE and more as data are collected and correlated it is coming to be understood that health matters are inextricably bound up with questions of economics. Nora Milnes<sup>1</sup> in her very able analysis of "Child Welfare" declares that this branch should be regarded as one of the studies of applied economics, which may well be conceded if economics be defined as the study of mankind in the ordinary business of life. It has lately been deduced from figures ob-

tained in connection with safety work that the man of thrift is much less prone to accident than the man of the more unstable economic status. Thrift promotion is often a prominent feature of welfare work. Even insurance companies in reinstating lapsed life insurance policies are inclined to deal more liberally in the consideration of the physical conditions of applicants, but to scrutinize more closely their personal habits and business standing.

While many questions enter into what may be considered to establish the insurability of life, good habits and a normal range of interests and activities supplement the value of stability in health and conversely, life expectancy.

Insurance companies are discussing pro and con recent bank insurance plans which confer the benefits of life insurance in conjunction with savings accounts. Many companies, instead of regarding this as an infringement of their own sacred prerogatives, seem inclined to regard all service as valuable, and to accept as of mutual advantage any measure that involves the education of the public to the life insurance idea, and to habits of thrift. The public mind cannot fail to be impressed with the growing insistence on the part of many banks on life insurance being carried where extensive credit is desired.

Meanwhile, the insurance companies themselves are aroused to put their investigations on a more scientific basis. Prior to the entrance of insurance investigators into the field of actuarial and mortality studies, practically the only available statistics of any extent were to be obtained only through charitable and public institutions, thus necessarily representing so selected a class economically as not to be applicable for wide generalization. The figures of the census are so general in classification as to require a refinement of analysis seldom possible to the average research worker or permitted by the usually limited budget allowed for such study.

The records of life insurance companies have afforded much more precise information. Their availability and the breadth of their service will be greatly extended if success attends the plans formulated recently in Chicago by the Association of Life Agency Officers to establish a Central Bureau of Research at Carnegie Institute. It is significant that the more successful insurance companies have been the most liberal in the budgets made available for research, and it is expected that this advantage will be disseminated by the use of a central bureau of research. The advantage to the general public of work of this kind on the part of insurance companies is that it immediately becomes effective throughout the country. The health idea and health interests are

<sup>1</sup> I. E. P. Dutton & Co., New York, 1921.

immediately and permanently stimulated by it. Every means of stimulating research, therefore, or that serves to put it on a more scientific footing, is to be welcomed.

### The Semi-Centennial of the American Public Health Association

THE SEMI-CENTENNIAL Meeting of the American Public Health Association held in New York City, November 14-18, was perhaps the most notable occasion in the history of the public health movement in America. The central figure of the celebration was Dr. Stephen Smith, the founder and first president of the association, a pioneer in the introduction of Lister's method of antiseptic surgery into America, and an associate of Dr. Elisha Harris in the sanitary survey of New York City which led to the enactment in 1866 of the first effective public health legislation upon this continent. In his ninety-ninth year, Dr. Smith attended the banquet of the Association and in a clear and vigorous voice read an address in which his youthfulness of spirit was evidenced by the fact that he used the achievements of the past century merely as an argument in favor of attaining even more notable progress in the fifty years that are to come.

The meeting was made memorable by the preparation of a jubilee historical volume entitled "A Half Century of Public Health," in which various authors described the progress made along public health lines during the past fifty years, and by an extensive health exhibit in the Grand Central Palace and a Health Institute under the auspices of the American Public Health Association, the United States Public Health Service, and other bodies, which is the first of a series of nineteen institutes to be held at different points throughout the country during the coming months. The registered attendance of more than one thousand members was representative of the entire country and the programs, particularly those of the public health administration, laboratory, food and drugs, vital statistics, and sanitary engineering sections, and the special sessions dealing with health education and publicity were of the highest quality. The New York meeting testified once more to the fact that this organization, representing as it does all that is best in the field of public health, is a mighty force for professional coordination and for public enlightenment. The election of Dr. A. J. McLaughlin of the United States Public Health Service as president for the coming year and the selection of the city of Cleveland as the meeting place for 1922 are both happy auguries for the immediate future.

### Cooperative Rural Health Work of the Public Health Service

ACCORDING to information compiled by the United States Public Health Service less than 6 per cent of our rural counties are provided with local health service headed by whole time health officers. Rural health work, because of distances to be covered and relative greater expense, has not experienced the same progress found in urban health work, and cannot be expected to exhibit equal advancement unless it has the assistance and stimulation from state and Federal agencies.

The cooperative rural health work of the United States Public Health Service, though of recent development, has already demonstrated the wisdom and efficiency of such joint agreements, as appraised in *Public Health Reports*, by L. L. Lumsden. During the past fiscal year cooperative projects were carried out in 38 counties in 15 states. The total expenditure for health work in these counties was \$292,063.59 of which \$31,460.82 was furnished by the United States Public Health Service, the remainder coming from state and local governmental services and private health agencies.

The sanitary district formed by ten Cape Cod towns in Massachusetts, the special demonstration work in ten Virginia counties, the tri-state sanitary district with headquarters at Joplin, Missouri, are examples of cooperative agreements which have resulted in increased health appropriation from local governmental agencies and enlargement of scope of the local health program.

The policy of according Federal aid to rural counties in setting up adequate health machinery is fundamentally sound, as gradually the entire expense will be borne locally. The International Health Board has initiated several valuable health demonstrations on this basis. The Sheppard-Towner bill though shorn of many of its more valuable features by various amendments, likewise grants Federal support in the encouragement and stimulation of state and local health programs. Rural health work must receive direction and assistance from central agencies such as the state and Federal Government, if it is to take advantage of the many advances in modern sanitary science.

### The Psychology of Golf

EVERY game from poker to chuckaloo has its element of psychology, otherwise it would not be a game. The competition, the concentration, the judgment, the self control, and the coordination between mind and muscle which



are required successfully to engage in any sport, bring out better than anything else the true character and mental makeup of the individual. The player is so busy trying to focus himself on the play of the moment that he is for the time being psychologically naked, and the other contestants, if they are not too self-absorbed, may, with ease, observe traits which on other occasions are carefully hidden from the world. This explains why so many friendships have been wrecked at the tennis court or the card table and, conversely, why what has hitherto been merely a pleasant acquaintance has ripened into a lasting respect and affection on the putting green. Also, it interprets many of the queer game groupings of individuals of apparently widely diverse personal characteristics. Many of the odd twosomes and foursomes seen on the golf course are merely the agglutination of complementary personalities, the golf addicts recognizing in one another certain elements of compatibility which to outsiders are cryptic.

It should be recognized that in a certain sense all games are abnormal in that they are attempts to deviate the subconscious. Thus, the man who is constantly repressing a desire to beat a frivolous wife, sublimates this baser urge into a two hundred drive, while the timid soul who apprehensively shrinks before a pompous head waiter, berates his caddy with the bravado of a buccaneer. The observance and analysis of golf players gives a fairly accurate judgment of what they truly are at base. Many a man who is a model of deportment in business and at home will indulge in soul-deep profanity at a wayward putt and many a player of scrupulous business integrity will "forget" a stroke at a critical moment. The man who is essentially mean will reveal his pettiness, the rash will disclose his temerity, the selfish will disclose his egocentric affection, the careful will demonstrate his caution, the liar will show his untruthfulness, and the patient his tenacity in the face of adversity. This unmasking progresses as the game proceeds, fatigue gradually lowering the curtain of self-concealment and a topped ball which on the first or second tee would have produced merely a temporary annoyance, will cause a torrent of rage on the seventeenth.

This brings into play the ability for sustained effort. In golf, as in life, many a man does brilliantly at first, only to go all to pieces later. Similarly, men have their ups and downs, playing or working with success or failure for a time, only to reverse this form, subsequently. In both there is an extraneous element at bottom. One cannot simultaneously worry about business and golf. To succeed at either, the matter immediately in hand must receive undivided attention. This is

why the man with a grasshopper mind, which leaps spasmodically from point to point, cannot win. Also this is the reason that golf is a relief, a relaxation, a soul balm when entered into wholeheartedly, with concentration on hitting the ball.

And here enters the psychology of the difference between theory and practice. The essential thing in golf is to hit the ball, to hit it squarely with a clean stroke and the force requisite to carry it to destination. The practical man realizes this and acts accordingly. The theorist sprays his mind about, on the weight and composition of the ball, the whippiness of the shaft, the position of his feet, the cut of his breeches, the droop of his shoulders, and the flexibility of his wrists. His caddy groans under a sack of unused clubs, the player fritters away his money and his energy on an unsuccessful game and his irritability increases in the inverse ratio to his failure until he becomes the pest of the course. On the other hand, the practical player neither clutters his mind nor his golf bag with useless things. He concentrates on a half dozen well tried clubs and hitting the ball. He does not shy at hazards, nor blame his caddy, the weather, nor the turf for poor strokes. He realizes that both success and failure are impostors and he plays golf as a game, not as an intense matter of life and death.

In all of this the element of faith plays an important rôle, faith in one's self without over self-confidence, faith in a particular club to do a certain thing, and faith in one's caddy. Not infrequently a lost ball is disastrous because the player subconsciously remembers that the caddy has just lost a ball for him and he raises his head lest the caddy in whom he has lost faith will lose another. The attitude on the tee speaks volumes about the player's self-confidence. The futile foot-shiftings, and flourishes, the squatting and shoulder wiggles, the careful preparations interrupted to readjust the hat or lower the tee, the frequent peerings at the distant flag, these all tell of indecision and uncertainty. Up to a certain point they are readily cured by the simple psycho-therapeutic measure of telling the player how many different kinds of fool he is making of himself and why. Then he will understand why the good player is able to walk right up to the ball and smite it on the nose. Certainly if one-armed, one-eyed, and variously crippled men can overcome their physical handicaps, normal individuals can rise triumphant over self-imposed mental obstacles.

Just as some men become drunkards with their first bottle of beer so do some become golf habitués at the first tee. They are the hopelessly incurable to whom golf is the all absorbing passion, par the rule of life and the fairway a holy

temple. They are like the psychiatrist to whom heaven was a perfect golf course with a dementia praecox patient for an opponent.

Poor, deluded mortals, these golfers, revealing their hidden personalities with every stroke. The braggart cannot hide his weakness, the dishonest his crookedness, the miser his sordidness, nor the real man the greatness of his heart, once they are out on the springy turf struggling with a perverse bit of rubber which, like the soul of man, begins life a resilient thing of purity and at the end of the game is discarded, hacked, marred and soiled, though subjected to many repaintings. Pitiful indeed are their strivings after unattainable perfection, for though they labor all their days yet will the end still find them unsatisfied, for none can equal the Great Inventor of it all. Yet through the imitation of perfection, comes peace of mind, health of body and length of days, for the psychology of golf is the picture of life's self.

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### Dr. Harvey Cushing, President-Elect American College of Surgeons

AT THE recent meeting of the American College of Surgeons Dr. Harvey Cushing was named as President-Elect. Dr. Cushing was born in Cleveland, O., April 8, 1869. He received the degree of A.B. from Yale in 1891 and the degree of A.M. and M.D. from Harvard in 1895. He served as house pupil in the Massachusetts General Hospital and, after some years abroad, on the staff of Johns Hopkins Hospital, where he remained over a period of fifteen years, during which time he was perfecting himself in his specialty of brain and nerve surgery in which field he stands pre-eminent. He is professor of surgery at the Harvard Medical School and surgeon in chief at the Peter Bent Brigham Hospital. It is expected that his method and training will enable him to render outstanding service in his new capacity.

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### Joint Functional Group on Statistics

INTEREST attaches to the recent organization of an interstaff committee of the National Health Council, known as the Joint Functional Group on Statistics, the primary participants in this Committee being the three organizations of the National Health Council which employ full time statisticians. The personnel of the group is at present made up of: Edith M. Furbush of the National Committee for Mental Hygiene; Miss Mary C. Clark of the American Social Hygiene Association; and Jessamine S. Whitney, secretary of the National Tuberculosis Association. Dr. Louis I. Dublin will serve as advisory

member of the Committee, and Dr. Donald B. Armstrong of the Common Service Committee and National Health Council will act as chairman. It is the creditable design of this Committee to organize the consideration of statistical problems, to make available all data on a given subject prior to undertaking new work, and to make possible more comprehensive studies by means of cooperative research.

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THE fifteen hundred or so physicians throughout the country who are making a specialty of industrial medicine, either in independent practice or in professional activities more or less closely associated with the special problems in a given industry, are being addressed severally and collectively by members of the American Association of Industrial Physicians and Surgeons in the membership campaign.

There are many reasons why every reputable physician who is devoting all or part of his time to industrial medical practice should identify himself with the Association. The necessity for keeping knowledge up-to-date is served by organization. Disorganization means defeat; while correlated research and calculated team work makes for increasingly higher standards. Distrust of specialization is born of situations in which the professional man sacrifices perspective to over-individualization. The Association meetings and the columns of THE NATION'S HEALTH are an open forum for the exchange of ideas. The Association will without doubt receive new impetus from the acquisition of new members and will arrive at a wider effectiveness through a re-statement of its purposes and the dynamic urge born of aggressive team work.

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OBSERVANCE of Health Week during December 4 to 10 by Rotary Clubs throughout the country has been set by the International Association of Rotary Clubs. Rotary Health Week was observed for the first time in 1920, and in many states considerable interest in public health was manifested by the business and civic leaders. The period set aside by Rotary Clubs corresponds with the Tuberculosis Week of the National Tuberculosis Association and its affiliated organization, so that plans for the health week are frequently prepared under the direction of both agencies.

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THE *West Virginia Healthfinder* is the name of a new health monthly which made its first appearance in October. The *Healthfinder* is published by the West Virginia Tuberculosis Association and its first issue contains illustrated articles of the state sanatoriums.

# HEALTH IN INDUSTRY

*Official Organ of the American Association of  
Industrial Physicians and Surgeons*

*Editors for the Association*

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## Legal Requirements Regarding Seats in Industry\*

Theory and Practice are Nowhere More at  
Variance Than in Posture Requirements

BY EDITH HILLES, BUREAU OF WOMEN IN INDUSTRY, NEW YORK STATE INDUSTRIAL COMMISSION, NEW YORK CITY

LEGISLATION develops so slowly that it is almost always far behind the most progressive thought in the community, and the laws regarding the provision of seats in industry are no exception. Practically all these laws, both in this and foreign countries,<sup>1</sup> are very general in wording, and except in a few instances the requirements are "suggested" rather than strictly enforced with prosecutions. In most instances the "provision of seats" is the only thing which has been required by law, and no distinction is made between a box, a barrel, a round top stool, or the best physiologically constructed chair.

### Laws in Foreign Countries

It is something of a revelation, however, to see the number of countries which have requirements of one sort or another on their statute books for the provision of seats in work places. Most of the laws which exist require seats for women or for minors, although in Germany and Austria the law reads "adequate" or "sufficient" seating accommodations, without a sex limitation, and the Australian Factories and Shops Act (Victoria), clearly demands "compulsory

provision of one seat for every three persons, irrespective of sex, employed in shops." In Switzerland (Ticino), the law also states "whenever possible sitting accommodations shall be provided for male and female employees in warehouses and shops."

France has a general provision for "one seat for each woman shop assistant," and certain of the French colonies are more explicit; for instance, in Tunis: "Stores, shops and other places connected therewith, in which merchandise and various objects are dealt with or offered to the public by women employees, shall be provided in each room with seats equal in number to that of the women employed there." The Australian law in New South Wales, Queensland, Tasmania, and western Australia, and the laws in Belgium, Spain, New Zealand, Peru, Argentina, and The Netherlands, include women or women and minors only; the number of seats is either required to be "adequate" or "one to three," or "one for every woman."

Greece has a special royal decree in regard to hygienic conditions and safety of workers in factories and work shops, passed in 1913, which demands that "in factories or work rooms where tobacco is prepared or manufactured, the employer must provide seats at least half a meter high for the workers." The only other law in Greece regarding seats provides for seats for women and minors "enough for occasional rest

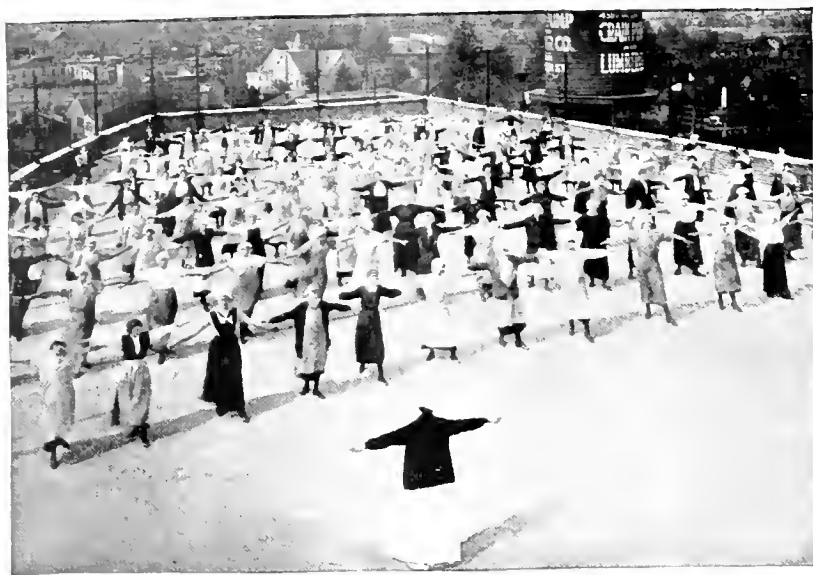
in retail sales places and in book-keeping offices."

The Home Office of the Ministry of Labor for the United Kingdom has taken particular interest in the problem of industrial seating, and has recently printed a welfare pamphlet on this matter.<sup>2</sup> The Shop Act of the United Kingdom (1912), provides for "compulsory provision of one seat for every three women assistants employed in serving customers." This provision was originally made in 1899 as a separate Act; in 1916 the Factories Act of the United Kingdom empowered the Home Secretary "to make order for any factory or workshop or class of factories or workshops requiring the provision of seats in work rooms." This is one of the "Welfare orders" made in the Act. Up to October, 1920, four orders had been made: one for munition plants, one for oil cake mills, one for a type of cannery, and one for laundries. In Norway, Denmark and Sweden there are no specific regulations for the provision of seats, but the factory inspectors "make suggestions to employers." A law was prepared and introduced in Denmark for the provision of seats "in commerce," but was not passed. The Secretary for the International Association for Labor Legislation in Christiania, writes that "We consider it to be a deficiency in our factory law that it

\*The data in these articles are taken from the report of the Bureau of Women in Industry of the New York State Industrial Commission, on industrial posture and seating. The illustrations used are from those courteously furnished the Bureau for their report.

1. Material on the laws of foreign countries was secured for the Bureau by Dr. Royal Meeker of the International Labour Office of the League of Nations, and also by the secretaries of the International Association for Labor Legislation in four different countries.

2. Seats for Workers in Factories and Workshops: Welfare Pamphlet No. 6, London, Govt., 1920, 16 pp.



How one company utilizes its rest periods to promote good posture

does not have any provision regarding seating, and I am pleased to tell you that the appointed commission for the improvement of our factory law, pays attention to this drawback in our legislation and is going to propose that proper seats shall be provided for all workers (both men and women), whenever it possibly is consistent with the kind of work."

### United States Laws

The laws in our own country have followed the same general trend; with the exception of a few laws requiring seats for street car motormen and conductors, provisions exist only for women. Salesgirls were the first group of women for whom seats were provided by law, because of the early recognition of the danger of constant standing, and New York State passed a law containing provisions for them as early as 1881.

By 1920 forty-seven states had laws requiring seats in mercantile establishments, and thirty-six states required seats in both mercantile and manufacturing establishments. A few states require seats for women in practically all work places.

Lack of uniformity in legislation makes these provisions very confusing, and in many instances the wording is so loose that enforcement is not only difficult but the meaning of the law itself is not clear.

The laws as they stand offer comparatively little protection to health, because even when a sufficient number of seats is provided, it is practically impossible to see that employees are allowed to use them.

Employees shall be "permitted to use the seats," when such use will "not interfere with the discharge of

duties," or when "not engaged in the active duties in which they are employed," or "for the reasonable preservation of their health." Some laws attempt to reinforce this loose wording by saying that no "arbitrary rules, regulations or orders shall be made preventing the use of such stools or seats," but too often an understanding exists that if a girl is found sitting down she is liable to discharge. In some work places the old idea still holds,—that to be seated is to be lazy.

Though the difficulty of determining when seats can be used is not to be denied, it is true that in many

cases a slight change in the work place would make seating possible where before it had been considered impossible.

The number of seats to be provided is in most cases designated as "suitable," though in a few states a proportion of at least one seat to every three employed women is required.

The type of seat to be provided is usually left to the "discretion" of the Industrial Commission or the inspectors. Three states, Minnesota, Ohio, and New York provide that where "practicable" seats with backs shall be provided. A few states supplement the laws by orders of a more specific character. Kansas, for instance, has an order requiring that "all seats shall have backs and foot rests, broad and firm enough to be convenient while working."

The most specific orders of any state are those of the Industrial Welfare Commission of California,<sup>3</sup> made for women employed in canneries in that state. This order was based on the most careful study which has yet been made for a particular industry. The order reads:

As far as and to whatever extent, in the judgment of the commission, the nature of the work permits, the following provisions shall be effective: seats shall be provided, at work tables or machines for each and every woman or minor employed, and such seats shall be capable of such adjustment

<sup>3</sup> California Industrial Welfare Commission, Bulletin No. 2-a: The Seating of Women and Minors in the Fruit and Vegetable Canning Industry of California. Harold Mestre, Sacramento, Govt., 1919, p. 3.



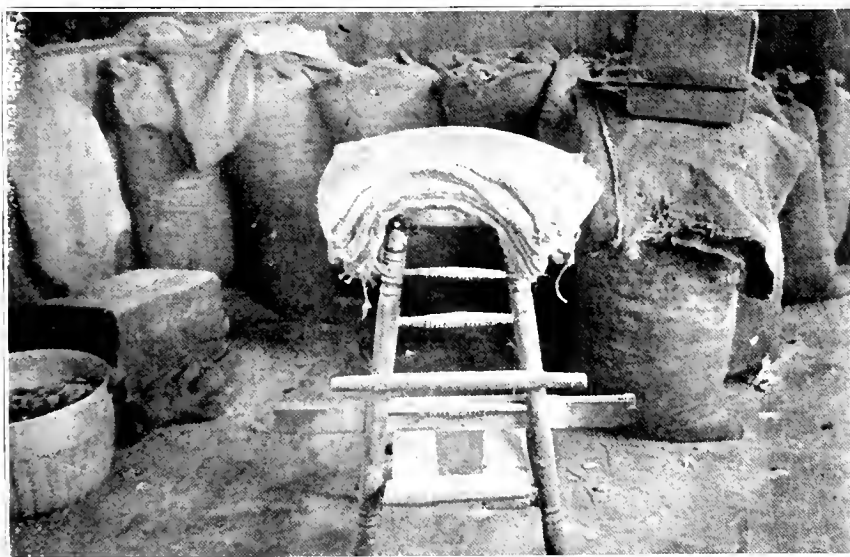
The position of this worker is conducive to fatigue and productive of the general symptom-complex known as "abdominal cramp symptoms." Courtesy The American Posture League.

and shall be kept so adjusted to the work tables for machines that the position of the worker relative to the work shall be substantially the same whether seated or standing. Work tables, including cutting and canning tables and sorting belts, shall be of such dimensions and design that there are no physical impediments to efficient work in either a sitting or standing position, and individually adjustable foot rests shall be provided. New installations to be approved by the commission.

### Enforcement a Problem

The enforcement of laws requiring seats in industrial establishments, is, of course, the chief problem. A requirement on the statute books means nothing if no action is taken to carry it out. The Pennsylvania law, for instance, requires that "at least one seat shall be provided for every three females employed or permitted to work, and all seats shall, during work hours, be conveniently accessible to the workers for whose use they shall be provided," yet in a study of mill conditions in the Philadelphia textile industry, made in 1918 and 1919, by the National Consumers League under the authorization of the Secretary of War, it was found that in spite of the requirement for seats for women in the mills—"Of the forty-eight plants in which this matter was carefully noted, twenty-nine provided no seats at all; in sixteen others women used boxes and bales, or occasionally a few stools scattered about. Six had properly obeyed the law, but these, with one exception, were small plants employing less than twenty-five women."

These laws seem very far behind indeed when the experiments of some of the most forward looking factories and mercantile establishments are viewed, where industrial engineers have really attempted to "fit the work place to the worker." Campaigns for "seats for salesgirls," and rapidly developing interest in the study of fatigue, have brought the question of seating to the fore. The reports of various committees studying fatigue, of the British Health of Munitions Workers' Committee, and the Federal as well as State Labor Departments, and of an infinite number of non-official groups dealing with industry, have all emphasized the importance of posture and seating at work. Their conclusions and recommendations are much alike in the standards suggested and, of course, go ahead of any legal requirements. Perhaps the best general summary of the points which they tend to bring out can be found in the Bulletin issued as a flier in an executive series of the National Safety Council, which reads as follows:



A seating atrocity encountered in the investigations of the Division of Women in Industry, New York Department of Labor.

The day of the ordinary wooden chair and of stools, without backs, as a part of modern factory equipment is past. Factory managers and the manufacturers of factory chairs know that a chair, to have utility, must be adjustable, so that it can be more nearly physiologically correct. During the last few years, the manufacturers of factory equipment have given some consideration to the things that make a factory chair desirable from the standpoint of physical comfort. Chairs should support the part of the body receiving the greatest strain from the work. The legs of the chair should be adjustable as to length, to suit the height of the user. A back rest which can be raised or lowered is generally desirable.

For certain operations the factory chair must be high. Under such conditions a suitable foot rest should be provided. In most cases the foot rest should preferably be attached to the work table, rather than to the chair. It should be large enough, and placed in such a way that the operative may be seated in a normal position.

When the work requires constant standing, chairs should be available for use during lulls in the day's work, and the employees should be encouraged to use them. Wherever possible, it is well to arrange the work so that the operator may stand part of the time and sit part of the time. Change of position appears to decrease fatigue and increase production.

The encouraging thing is not what has already been written into the existing laws and standards, but the fact that we have reached a time when shop equipment is recognized as needing study and needing standards, not only for the sake of economy and efficiency in production, but also for the sake of the workers who must be considered as human beings.

Science does create the will to serve.—Todd.

### Engineers Plan to Confer on Industrial Waste

In a statement recently made public by the American Society of Mechanical Engineers, announcement is made of the five-day annual meeting to be held in New York City December 5 to 9, to consider the bearing of the investigation of industrial waste recently completed by the American Engineering Council of the Federated American Engineering Societies. Speakers from many cities participated in a program embracing a wide range of subjects of public, technical, and social import. Education was the theme of special sessions. At this meeting Dean Dexter S. Kimball of Cornell, the new president of the Society, and other officers were installed.

"The reconnaissance report on waste in industry is the result of five months of intensive study, carefully planned and rapidly executed," said Secretary Hoover. "A part of its value lies in the speed with which the work has been done and the promptness with which it presents definite lines of future action.

"It reveals facts which may serve as a foundation for an advance in American industry. It has a special message for government officials, financial, industrial, and commercial leaders, labor organizations, economists, engineers and research groups, the general public and the press."

There is an unmistakable trend in modern social reform toward collective control over all conditions of community life.—Todd.

# Mobilizes for Membership Drive

The American Association of Industrial Physicians and Surgeons is now six years old and has five hundred fifteen members. Membership has been increasing steadily since the inception of the Organization.

It is conservatively estimated that there are at least two thousand five hundred physicians in the United States engaged in some form of industrial practice. Surely, one thousand of this number should be bound together in an organization whose purposes are (a) to foster the study and discussion of the problems peculiar to the practice of industrial medicine and surgery; (b) to develop methods adapted to the conservation of health among workers in the industries; (c) to promote a more general understanding of the purposes and results of the medical care of employees; and (d) to unite into one organization members of the medical profession specializing in industrial medicine and surgery for their mutual advancement in the practice of their profession.

If each one of our present five hundred fifteen members will activate himself sufficiently, he can secure at least one new member. We are counting on a genuine expression of cooperation from everyone. The officers and directors of the Association are earnestly striving to develop the organization to its fullest possibilities of usefulness and in the very nature of things, we can do more for the advancement of the Association if we have an increased membership.

No matter how small a part of your time is devoted to industrial practice, you are eligible to membership. Our dues are five dollars yearly, but to join now will cost only two and a half dollars. This will pay your dues to May 1, 1922. Membership entitles you to:

(1) Our official journal—THE NATION'S HEALTH—which contains full reports of all the affairs of the Association, together with other interesting articles on industrial medicine.

(2) Bi-monthly abstracts of current industrial medical literature.

(3) Reports and digests of interest to those engaged in industrial work.

(4) Privileges of the annual meeting which is to be held in St. Louis May 22-23, 1922, in conjunction with the meeting of the American Medical Association.

May we count on you who are al-

ready members to do your part in this campaign for one thousand members? Please do not fail us.

WM. ALFRED SAWYER, M.D.

AN ABSTRACT of industrial medical literature was sent to each member of the Association the middle of November. If you did not receive it, please advise the secretary. You are entitled to one and it is worth having. With this abstract was a mimeographed letter regarding the membership campaign which is now in full swing. With this letter was a bill for an assessment. This assessment is important and must be paid at the earliest possible moment. Look it up and attend to it.

The meetings of the Industrial Hygiene Section of the American Public Health Association, held in New York City, November 15 to 18, were well attended and full of interest.

Dr. C. H. Watson's paper on "The Physical Examination of Higher Executives" demonstrated very clearly the need and value of such periodic surveys of industries leaders. The executive is just as susceptible to the benefits of the physical examination as is the man in the ranks. Dr. Watson feels that much would be accomplished if, at the beginning of an executive's service he could be examined and advised as to his fitness for the task before him. Once the grind grips him, he quickly forgets necessary health measures and before he is aware of it, is on the road to a breakdown. However, in many cases the executive's physical ability is far above that of the rank and file, and he soon realizes the necessity for proper care of the physical machine.

Dr. Vermilyea of the Guarantee Trust Company called attention to the frequent lack of thought with which physicians in industries and commercial houses are chosen. Often they are selected because they happen to be the family physician of the president or some other officer. He stated that this procedure has frequently resulted in heart cases being cared for by a gynecologist, and patients with paresis being placed in the hands of a surgeon.

Mr. Edgar Sydenstricker of the United States Public Health Association, in his paper on "Morbidity Records in Industry," said that in most industries records of sickness were

kept in connection with sick benefit organizations and only absences extending over three to seven days were recorded. To arrive at a true estimate of sickness, figures must deal with sickness from the first day's absence. The short illness is often the symptom of ill health and indicates the time for preventive measures. He also urged that employment and sickness records should be correlated and we should determine just who are responsible for the absence. It is often found that from 15 to 20 per cent of the force are responsible for 60 to 70 per cent of the lost time.

Dr. H. W. Gentles of the American Red Cross and Dr. R. R. Sayres of the United States Bureau of Mines demonstrated the unquestionable value of prone pressure resuscitation over all the other forms. There has been a distinct tendency of late to use the various machines now on the market to the exclusion of the simpler, safer, and surer way provided by the Shaeffer or prone pressure method.

Dr. John R. Murlin of the University of Rochester presented a splendid paper on the "Workingman's Diet" and an effort will be made to get it before the members in its entirety.

Dr. E. L. Fisk, in his paper on "Fatigue," emphasized that little can be accomplished in the study and correction of fatigue until the numerous physical defects in workers are corrected. It is a problem in pathology as well as in physiology.

The paper on "Dental Work as a Prophylactic Measure in Improving the Physical Condition of Employees," given by Dr. Thaddeus P. Hyatt of the Metropolitan Life Insurance Company, and discussed by Dr. Henry S. Dunning of the College of Physicians and Surgeons, New York City, was most valuable. We may be able to have it published in our journal later. It will, of course, appear in the *Journal of the American Public Health Association*. He stated that the bacteria in a clean mouth are not harmful, but in the dirty mouth the virulent bacteria are present. He defined a clean mouth as one having no deposits, no inflammation, and no decay. He has found fatigue in every case of dental infection.

Already we are hearing from our members on the assessment levied in November. How about you? In the next issue we will be able to give a list of our members who are putting their shoulders to the wheel. Will you be one of them?



# Life Saving Makes a Popular Appeal

## Social Sense Demands Support of Management and of Engineering and Medical Departments

BY OTTO P. GEIER, M.D., CINCINNATI MILLING MACHINE COMPANY, CINCINNATI, O

THE industrial physicians' exhibit at the Cincinnati Health Exposition marked a step in civic progress. It served to emphasize the claim that the health and safety of any community is a measure of its prosperity, intelligence, and progress—that no community which neglects any means of imparting to its people the knowledge of the way to health has fulfilled the duty of government for which it is organized. It set forth the fact that the making of men is quite as important as the making of goods. It undertook to prove that intensive health work in industry is a practical paying proposition in increased energy and good will, and as such is a big factor in the industrial human equation between employer and employee. It sets forth the principle that good business is based on justice and right—that all men at heart are square and are moved by the same human emotions; that all men seek leadership, and that society fares well or ill, depending upon whether the leadership that appears is sane, intelligent, constructive, or whether it is irrational and destructive—that the employer is largely responsible for the prevailing type of leadership in our communities; that the right and wrong of our present industrialism so thoroughly permeate individual and collective thinking that we are right or wrong in our mass consciousness just in the degree in which industry succeeds or fails in establishing high principles of action and consequent deserved leadership.

### World Statesmanship Needed

Good citizenship is needed today as never before. The world's turmoil can only be made orderly by clear thinking and highmindedness in public, business, and private life. America, drawn into the whirlpool of world policies, needs a high quality of statesmanship and this, in a democracy, can result only from a high type of citizenship, at peace with itself and seriously alive to every opportunity that will conduce to national and world welfare.

The day has passed when our countrymen can assume the fatuous complacency that we are self-sufficient—

that we are rich—independent of Europe's social and economic problems—safe against the types of class clashing that are undermining all the structures of the old order of things abroad. Let us beware of foolish vainglory. Struggle and service of a new type alone can save us from becoming engulfed more or less in the world's madness.

Upon the stability of our industrial system largely depends the stability of our international relations. We must be able to show that we know how to govern ourselves before we can help other nations mould their disrupted selves once more into secure governments. Democracy is on trial.

The far seeing industrial leader knows that we cannot secure the needed energy, cooperation, the willingness to produce, out of men whose bodies are cramped by sickness and whose minds are twisted and poisoned through a rankling sense of injustice or through unnecessary suffering by injury and ill health. The intelligent employing groups know that the new competition will not permit the wastage of millions weekly on account of preventable illness and accidents. This country could perhaps stand this loss when the products of its natural resources were finding ready markets the world over but not under present conditions.

Now we must stop the leaks—all the wastage, not only industrial but public and political. Big men are needed everywhere, to think, to plan for the people as a whole, to assume leadership, for then only may we hope that America may continue to hold its place and yet prove again the wisdom of our forefathers in founding this democracy. Are the industrialists meeting this challenge for leadership?

### New Sense of Responsibility

That management here and there is taking serious account of its stewardship was indicated at a meeting held recently in Boston where the representatives of the Associated Industries of Massachusetts, the Boston Employment Managers' Association, met in conference with those of

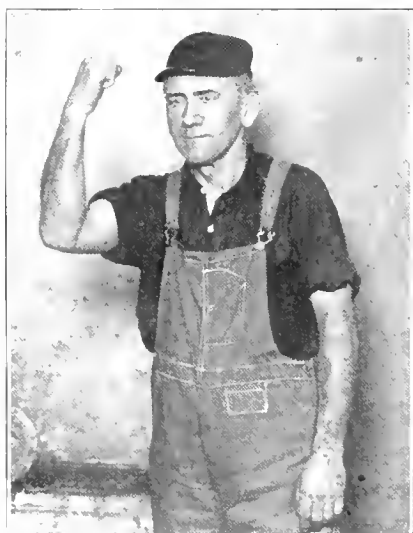
the American Association of Industrial physicians.\* How these business men evaluated industrial medicine may best be shown by brief quotations. Mr. Andrews, the president of the Associated Industries, said: "The employer, not as a matter of charity—but as a matter of sound business methods and as a matter of discharging an obligation toward those who are associated with him, finds that there is something to be done by management in relation to health of his workers." Mr. John Spence, works manager, Norton Grinding Company, in concluding his appreciation of the value of medical supervision, said: "I am quite convinced, however, that even from the standpoint of a money valuation that there is just as much profit, if not more, in this kind of work as in the careful maintenance of the plant." Mr. S. A. Robertson, manager, Eastman Kodak Company, speaking to the same point and referring to their 120 per cent wage increase since 1914 with only 27 per cent increase in labor costs said: "What part of this increase in output the medical department is responsible for no one can tell, but we are convinced that a good ratio of that increased production is probably due to the care of the physical condition of the workman. . . . and unless he (the employer) is big enough to put these things over and get the cooperation of his employees he will be a failure in the manufacturing business." Mr. Howell Cheney of Cheney Brothers, South Manchester, Conn., speaking on the subject of Medical Service as affecting industrial relations, said: "To some degree the stability of these United States depends upon the effectiveness of your contribution of medicine to the industrial organization. It is impossible to doubt that the industrial physician has made a great contribution to this job of bringing about better relations between the employer and the employed; that should he go, industry will have lost what it never can replace in other ways. Having achieved that vision, the battle is half won."

\*See symposium of papers in September issue of THE NATION'S HEALTH.

## *The* **Making of a Radical**

**UNSAFE,  
UNCLEAN WORKING CONDITIONS,  
FREQUENT ACCIDENTS,  
UNNECESSARY ILLNESS,  
WASTEFUL METHODS,  
CARELESS TREATMENT OF EMPLOYEES,  
DRIVING RATHER THAN LEADING,  
SLIPSHOD WAGE SYSTEM.**

**All these things produce constant  
dissatisfaction & Irritability  
in the shop and at home.**



Unnecessary tensions, inflexible resistances, and lost motion mark the discontented workman.

Industrial physician and nurse, safety man and workman joined hands at the recent Cincinnati Health Exposition to demonstrate to the one hundred thousand or more visitors that medical supervision in industry is a vital factor in any health program, community or personal; that it is doing for the adult not only what medical supervision is doing for the school child, but that it is a great social and educational force for the employer, the employee, as well as engineering, medical, nursing, and dental professions.

To our knowledge, this was the first attempt on the part of the new specialty of industrial medicine to crystallize in the form of a public exhibit the purposes and possible accomplishments of health work in industry, and it is felt that a profound



Fatigue studies that concern themselves chiefly with the increase of efficiency through the elimination of unnecessary motions could be well supplemented by consideration of waste through unnecessary emotions. Unprotected machines, insanitary working conditions, undue noise, evoke needless tensions, hampering inhibitions, and even subconscious obsessions of fear that consume the workman, mar the product, and become the source of endless frictions.

impression was created thereby in the minds of those interested in social progress.

### **The Workman Speaks**

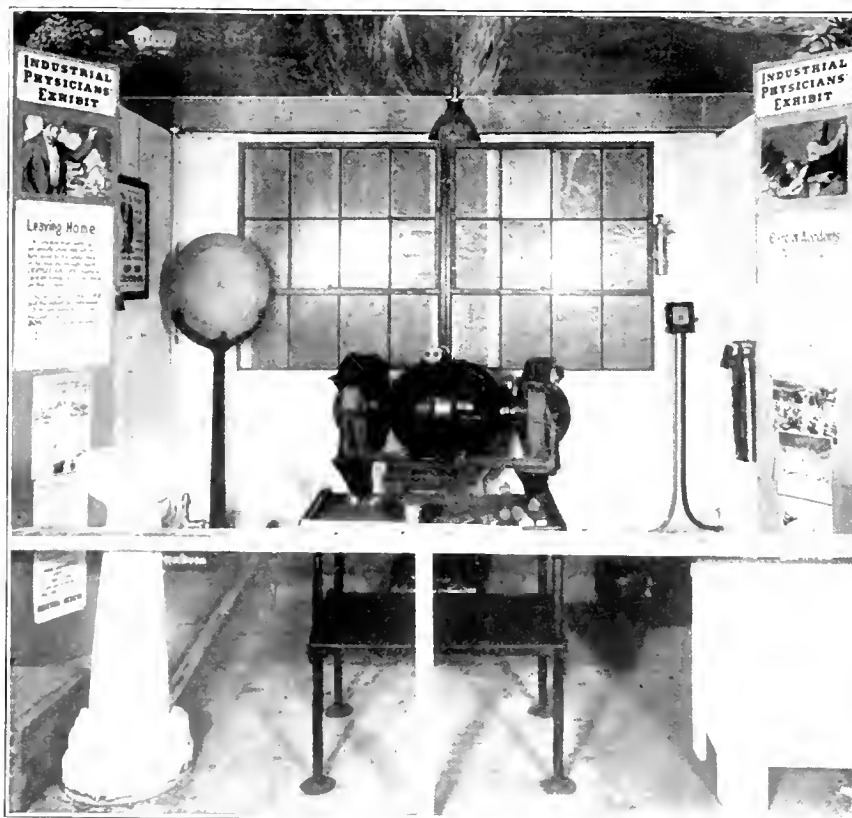
Color and action were given to the exhibit in that machinery was in motion in the two contrasting miniature work shops, where machine operators, taken out of industry, held the attention of the visitors all through the afternoons and evenings by their constant comments on the advantages and disadvantages of their respective working conditions.

The man in the overalls held the stage not to deery working conditions, but constructively to criticize the good and the bad in present day methods of production and in simple language to point the way to safer and more healthful working conditions, with a larger output per man, with better wages, with less injury and sickness, with friendlier relations between employer and employee, with fewer burdens on society and with better citizenship throughout.

The shower of sparks off their respective emery wheels always drew a crowd to the rail in front of their little shops. Then each in turn would enliven their audiences with the feel-

ings that come to workmen as they face their daily jobs, explaining how these feelings are influenced by the conditions under which they work, how it affects their bodily and mental vigor, how it affects their output in the working hours, and finally, how it influences their behavior to their families and to the community after working hours.

Almost all of us feel ourselves elected to teach the workman better ways of living, but when Ed Grosbernd, the hard fisted, fearless eyed demonstrator in the bad shop, a veteran of the Spanish War, standing in his overalls before an audience of more than four thousand five hundred in the great Music Hall, was introduced for a few minutes' talk, he was warmly received. When in short, terse sentences, with the spirit of the Crusader, he drove home to that audience the fundamentals of health, safety, and sanitation and their effect on the workman's mind, followed with a plea directed to employers, employees and the public to get behind such efforts, the audience thundered its applause beyond that granted any of the great national health speakers of the exposition week. Ed's short, sharp jabs at the fundamental



Shop surroundings like this require no compromises on the part of the workman. Secure in satisfactory working conditions and treatment, unhampered by ambiguous impulses, he finds health and joy in his work, and efficiency marks the performance of his day's work.

truths was followed by a splendid address on "The Health of the Worker" by Dr. Woods Hutchinson. But that famous publicist gave expression later to a feeling that was in all of our minds that evening, and that is, that as propagandists we have not taken count of the psychology of the workman's mind and that there are many Ed Grosbernds in our factories who could assist us marvelously in our educational endeavors.

On this same platform sat also the safety worker, Lindley Moore, who was in charge of the good shop. He was introduced as one who had given Uncle Sam twelve years of service in the Navy and now is taking the training as a safety man under the Federal Board of Vocational Training, giving promise of becoming one of the best safety and sanitation teachers in industry. A snappy sailor salute was all the audience got from Lindley. The industrial nurse also was presented, and she, along with the industrial physician on the stage, was shown to be another link in that chain of workman, safety, and sanitation man, doctor, and nurse, from whom is expected so much to promote health and welfare. But to return to the industrial physicians' display in the main exhibit halls:

To begin with, it was a joint exhibit of the work of ten companies in this vicinity employing full-time physicians. Upon my able associate, Dr. C. L. Ferguson, fell the many weeks' task of gathering medical, surgical, dental, and employment data upon which were based the posters and graphic representations used in the exhibit. Lack of standardization of records in this field, like in all others, made the task of collecting the statistics difficult.

#### A Composite Picture

Our general plan was to give the public a composite view of industrial medicine as it is practised in the ten plants, presenting rather the average conditions rather than the advanced work done in any one or more of the plants. It was interesting, for instance, to note that 11,800 physical examinations were made in all in 1920; that the average percentage of rejection was 5.7 per cent; and that rejections varied from 1.2 per cent to 8 per cent. It was impressive to note that among 11,800 employed, 70,000 medical cases and 35,000 surgical cases visited eight industrial dispensaries, making a total of 250,000 visits and revisits for all causes.

Some of these industries reported

## BETTER Citizenship

Safely guarded modern machinery.  
Education in **SAFETY**.  
Clean working conditions, adequate  
Ventilation and lighting.  
Reasonable comforts and conveniences  
A fair wage system.  
Considerate personal relations.

These factors induce team work,  
fair play, good shop government  
on all day long example of our  
responsibilities to job  
**Self·Family·Citizenship.**



The sharp contrast between the good and bad shop is reflected in the characteristics of the workmen.

that as high as 7 per cent of the working force daily sought the physician's aid for one reason or another. The average ratio of medical to surgical cases was as 7 is to 3.5. The collected data showed, on the other hand, that almost invariably the sickness rate and absence because of sickness was materially reduced, in some instances being cut in half; that lost time from infected wounds after installation of medical service, with its prompt and proper treatment, reduced infection cases to the negligible point. The effort to collect comparable statistics proved to the cooperating medical departments the necessity for standardizing their records and in the interest of determining what may reasonably be considered the irreducible minimum of record that will still furnish sufficient in-



## KNOW THYSELF

*10,000 physical examination were made during 1920 by 6 plants, employing 11,000 workers.*

*A small % had contagious diseases, epilepsy, very defective vision, disease of the heart, lungs and kidneys, preventing employment.*

*Few of the 10,000 had ever been examined.*

*All were advised of physical impairments and referred for medical or surgical treatment.*

*Spread of tuberculosis & other contagious diseases in the plant were prevented*

formation for intelligent deductions as to monetary and other values of health work in industry.

It was useful, for instance, to contrast the fact that while eight industries furnished 11,800 men convenient clinical facilities for 250,000 visits in 1920, the out-patient department of the Cincinnati General Hospital, with its score or more of physicians and nurses, afforded but ten thousand patients clinical facilities for thirty thousand visits. Even with free medical service, the cost approximated twenty thousand dollars. This comparison becomes even more interesting to society when it is realized that preventive work and early diagnosis, before incapacity takes place, generally obtain in the case of the industrial clinic, thereby preserving these workers as independent units of society by maintaining their health and earning power and thus preventing their migration into the class of charity seeking individuals found at the public clinics and hospitals. Here one naturally raises the next question, and that is, what proportion of the nearly six hundred thousand dollars spent by the General Hospital on ten thousand patients as expense for 182,354 hospital days, might have

been saved if industrial medicine, which cuts down absence on account of illness one-half, had been more generally introduced in Cincinnati years ago. In other words, is society spending its money for medical and surgical aid at the point at which it will accomplish the most good?

In compiling statistics of this sort one cannot escape the indisputable fact that industrial medicine is preventive medicine practised on the firing line; that the daily supervision, the accessibility of the service to the patient, the frequency of observation, the early diagnosis and prompt treatment is the sanest and most economical way of preventing human wastage; that it keeps the front line of industrial attack and maximum production intact; that this is the best means yet devised for keeping the old time "evacuation stations" free from overflow of chronically incapacitated dependents; that to reduce the size of the human scrap heap most systematically we must move more of our scientifically trained medical men up to and on the industrial firing line.

We are digressing, however, too much from the immediate story of how these facts of industrial health work were presented to the public. The first two halftones accompanying this article show but two of the eight booths allotted to the industrial physicians for their display at the Health Exposition. However, they furnish to the reader the general plan of display of the educational material used throughout. The two shops shown sharply contrasted the clean, well lighted and ventilated conditions, safety guarded machinery in charge of a happy, efficient workman, with the dark, unclean, unhealthful, unsafe conditions of the bad shop, where a dissatisfied workman demonstrated what interfered with his efficiency. In the other six booths there were displayed in order a well equipped employment office, waiting or rest room, medical dispensary, laboratory and supply room, a surgical room, and, finally, a dental office. Here nurses, doctors, dentists, and employment managers made effort to satisfy the questions of the passersby. When the workman-spieler in the "bad shop" finished his talk he passed his audience on to the "good shop" spieler, who usually finished his remarks by pointing out the splendid facilities down the way, the nurses, doctors and dentists, which his thoughtful employer furnished him.

And so it went on from day to day

until the close of the exposition. Of course, there were numberless cases of good natured controversy between these two spielers and the passing public. Here came some employer who said that the bad shop as pictured did not exist in reality, and then occasionally a workman who said that the place where he worked was just as bad. Then in turn came several industrial leaders who were so impressed with the forcefulness of this exhibit that they forthwith sent out letters to the entire membership of organizations of which they happened to be officers, urging these manufacturers to visit the exposition and, particularly, this exhibit.

And so between the sparks of wit and emery, between the good natured sallies from the visitors and ready answers from the man at the machine, the explanations by doctors and nurses down the line—between all these and with the help of attractive line drawings of industrial subjects backed up by brief, trenchant statements on posters, there was brought to the public mind the appreciation that industrial medicine has added a new and positive factor to the science of the prevention of disease and lost time on account of accidents, and



## Good Management and Good Health

*Modern management knows it pays to spend annually \$53 to \$123 per employee to keep its working force physically & mentally fit.*

*The human body is the most valuable and delicate machine & should be conserved at any cost.*

*Preventable illness is a great drag on employee, management & society.*

**INDUSTRIAL MEDICINE  
Can Save This Loss.**

that better industrial relations is but its corollary.

### The Making of a Radical

The thoughtless employer blames the labor agitator for most of the radicalism that appears in the ranks of labor, giving little thought to the fact that he may himself contribute largely to the prevalence of that state of mind. The employer is often prone to forget the enormous advantage that he holds over the labor leader in that he, through his organization, is in daily contact with the worker, whereas the radical labor leader's contacts are but intermittent. Too few employers appreciate that the unclean, unsafe shop where the foremen and executives drive rather than lead their men—where even the common garden variety of human considerations, comforts, and conveniences are missing—is also the shop where the men's minds are daily poisoned against organized industrial leadership and, conversely, opened to any other leadership that may offer. It is during the working hours of the day that men's minds are most alert and receptive, and it is important, therefore, that the impressions that are hourly being made upon those minds should be free from fair crit-

icism. Unnecessary and frequent accidents, preventable occupational hazards, thoughtless treatment of employees, wasteful methods of production, slipshod wage system, where the employee is unable to check his own earnings, are all factors that lead to disagreeable relations between the employer and employee and add to the age long gulf between labor and capital.

### Better Citizenship

The Disarmament Congress at Washington is spelling a new era between nations and promises the release of billions of dollars, now used in the manufacture of instruments of destruction, permitting these sums to be used for the improvement of living and working conditions, along with educational facilities for the people of all the world. It may be said with equal truth, that if organized labor and organized capital could also be disarmed to the end that the ever constant strife between these two groups could be lessened, billions of dollars in added production, added earnings, would take the place of the enormous wastage that now occurs because of this constant strife. The conditions of industry, the relations between employer and employee, are a very fair index of the character of any country or community.

The individual employer too frequently forgets that his particular industry is but a part of the whole and that the character of relationships that exist between himself and his men leavens the state of mind that exists between the employing and employed classes of his community, and that the general quality of the citizenship of which his men are a part, is raised or lowered, depending upon whether his organization is producing happy, contented citizens.

It cannot be denied that clean working conditions, reasonable comforts and conveniences, a fair wage system, and considerate personal relations throughout the working hours, produces a state of mind, a shop spirit, a certain morale, that makes for a feeling of responsibility throughout the organization, an appreciation of the necessity for organization and the part that each must play in such. Out of this feeling of mutual trust and confidence there grows a respect, not only for the industry but for society as it is organized, and a better quality of citizenship is the net result. The consideration of the health of the worker is but one factor in the important per-



## WORK HERE AND LIVE LONGER

*A slogan that might be well adopted by many industries.*

*The proper physical care of the worker, the providing of good working conditions lead to better health stability of the industrial organization and a higher quality of product.*

sonal relations program, but it goes a long way to help make men sane both in body and mind. Contented citizenship does not grow out of a populace which is suffering from unnecessary illness and injury. Many of the so-called grievances can be traced to a physical basis. Not the least satisfaction that should come to the intelligent employer in creating a good shop morale through these various methods should be that he also creates thereby happier contented conditions in the homes of his employees. And thus is effected an even wider circle of citizenship.

### Care of Accidents

The dollars and cents value of the prevention of unnecessary accidents has been so thoroughly proved by the National Safety Council that little need be added in that direction. What the employer has failed to sense however, is that enormous savings can be made by the prompt and efficient treatment of all accidents as they occur and that the installation of medical departments in industry has long ago been taken out of the charity welfare class. The immediate attention to injuries by men especially trained in that work not only reduces the number of infected cases to practically nothing, but greatly shortens



**SAVED**  
**\$265,500.00**

*11,800 workers made 106,432 visits during 1920 to seven Industrial Medical Departments Because of Illness*

*186 were referred to specialists. Those incapacitated for work, sent home and advised to consult their family physicians*

**INDUSTRIAL MEDICAL SUPERVISION cut the normal 3% absence on account of illness in half.**

**Saved to these 11,800 workers \$265,500 in Wages.**

the period of disability, reduces unnecessary pain, reduces the loss of wages, and of course adds to production.

There is some danger, now that industry has allowed a fixed charge in its budget to cover the cost of industrial accidents through Workmen's Compensation Acts, that it may henceforth regard its responsibility in this direction as closed. We do know, on the other hand, that a great percentage of accidents and their expensive sequelae are so largely preventable that these present fixed costs might well be reduced by one-half. Statesmanship in this country is not at a very high premium, but nowhere has organized society shown any greater weakness and incapacity to reduce unnecessary wastage than in the handling of these great state funds under industrial compensation commissions. It is time for industry to wake up and supply the leadership, the brains and the facts that will make of the state compensation commissions great social agencies for the prevention of accidents and proper treatment when they occur and thus save to society the present waste of men and money. One direct and immediate result of such intelligent organization would be the pre-

vention of the conditions that lead to occupational disease, their prompt diagnosis and proper treatment.

### Leaving Home

A pen drawing showed the picture of a happy workman leaving his home in the early morning hours, waving "goodbye" to his wife and children. In Ohio, approximately four thousand such men each year wave their goodbyes to their families in the morning, never to return alive. Thousands upon thousands more are brought back home crippled for life and unable to care for their families, which, even though they receive compensation for permanent disability, are most likely in the end to become a charge on the community. In the same way five thousand dollars or six thousand dollars, as compensation for death on account of injury, merely cares for the family temporarily, but permanently takes out of the community a productive citizen who was not only providing for his family but was adding to the total wealth of that community.

### Good Management and Health

The value of the prevention of illness and the value of life prolongation methods are so well accepted today that we can well judge the intelligence of governments—national, state and local—by the type of work that is carried on by them to assure their citizens freedom from contagious diseases. Millions are expended in protecting the food and water supplies and giving proper medical supervision to the growing child at school. A great many more millions however are spent in the erection and maintenance of hospitals largely used for curative work. Relatively little is spent by communities in an intensive application to the individual of the science of the prevention of disease or its early diagnosis.

The difficulty ever has been for society so to organize its medical supervisory forces as to make medical attention so accessible and convenient that individuals at large would apply for such medical attention at the incipient stage of illnesses. It has been practically impossible to educate the average man to consult the physician regularly for a physical examination that would discover any deficiencies that may exist and to correct them promptly so that they will not become permanent in their nature and thus interfere with his earning capacity.

With the establishment of the new specialty, industrial medicine, and the placing of the physician in industry,



### Associated Charities Robbed

**Cost of a bad Tooth**  
JOHN W., laborer lost 150 days  
or \$480, in wages because of  
**CHRONIC RHEUMATISM**

The trouble was traced to  
**INFECTED TEETH**  
**WHICH WERE REMOVED.**

**RESULT**  
No time lost during next two  
years. 480 extra dollars for  
his family.

INCREASED STRENGTH & EFFICIENCY

**CHARITY**  
Robbed of another case.



### Filling A Need

*45% of workers never  
had seen a dentist.*

*In three of these plants employing  
part time dentists, 3300 employees  
made 3608 visits to dentists during 1920.*

### General plan of industrial dentistry

*Instruction on mouth hygiene  
cleans teeth once a year, gives  
worker a chart of his teeth  
noting the work needed to be done.*

*Industrial dentistry does  
for adult what school  
dentistry does for the child*

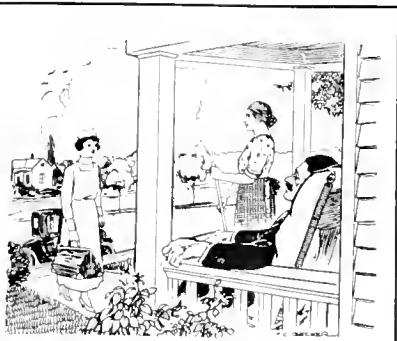
medical attention has for the first time become daily and conveniently accessible to the adult. Intensive preventive medicine applied to the individual here becomes possible. It is sought out by 7 per cent of the working force each day in some industries. To supply such service costs from five dollars to twelve dollars per employee per year. The fact that the best managements in the country have continued this service indicates that it must pay for itself.

Modern management spends vast sums in keeping its machinery and equipment in a high degree of perfection. The human body of the worker is the most delicate and valuable machine in the plant. Upon its efficiency, physical and mental, finally depends the efficiency and output of the machinery and other equipment. Poor health is a great drag on the employee and management. It spells the idle machine, lost wage and production, and society is vitally interested in all three.

Good health, good shop spirit, good relations, and good management go hand in hand.

Organized labor has, in the main, raised objection to the making of





## **Messenger of Good Will**

*The industrial nurse an aid to the family physician.*

*Makes temperature and pulse readings, suggests suitable diets, instructs family in care and comforts of patient.*

*Keeps patient in touch with the men, foremen and the physician of the plant.*

*Her periodic visits may save the cost of a full time nurse.*

physical examinations at the time of employment, claiming that too many men were thereby thrown on the human scrap heap. Further, that industry was largely responsible for the physical defects in individuals and that society must see to it that these individuals also be given a chance to provide for themselves; that the unfit must be carried along with the fit at the cost of industry.

Answer has been made to this position that labor gains nothing by being ignorant of its physical impairments; that the making of physical examinations is the first and fundamental step either toward physical restoration or proper placement in jobs suited to the individual; furthermore, that society gains in knowing the size of the human scrap heap and what factors contribute to it so that legislation and other steps may be taken to prevent human wastage.

Intelligent consideration however of the subject now brings nearly all of us to the view that the making of physical examinations is a decided step in the conservation of human life—that the mass of workers in any plant are entitled to the protection against the spread of contagious disease afforded by this practice, that the hazard of having operators of machines, cranes, and other trans-

porting methods subject to epilepsy, heart failure, or defective vision must not be tolerated.

Physical examinations by industry carry a serious lesson for the medical profession in that a very large percentage of the men examined report this experience as the first time that they had ever been completely examined by a physician. It is also a first time for them to become really interested in themselves as physical entities. With this physical examination comes a larger interest in the desire to know the real basis for any illness, an earlier seeking of medical attention, a greater willingness to employ physicians more frequently, and to submit to surgical and other procedure when necessary.

### **Work Here and Live Longer**

When labor was scarce all manner of devices were used by industry to attract the worker, many of which were socially and economically unsound. The American workman fortunately has an independent attitude toward coddling welfare work. The present industrial depression unfortunate as it is, will serve a real purpose in eliminating the frills and furbelows of such welfare work.

In strong contrast to the useless welfare work is the real service that is rendered the worker and society in providing good working conditions, stability of health, the reduction of suffering and loss from disease and accident that usually attends intelligent medical supervision. The far-seeing employer has not scrapped the services of the medical department in these parlous times, but recognizes that the physician can make a real contribution to a better morale and the necessary higher output per man at lower cost, that is so greatly needed at this time. Work here and live longer is a sane democratic appeal to the best type of employee.

It is always exceedingly difficult, even hazardous, to try to translate the value of preventive medicine into dollars and cents. A large insurance company recently broke its silence and made the first definite statement as to the money and lives it claims to have saved because of its periodic physical examinations. In this study 5,987 individuals, who were carefully examined annually over a period of six years, were placed alongside a comparable group of a like number of policy holders who did not elect to accept this annual physical review in those six years. The company spent \$48,900 in periodic physical examination work and effected a gross

saving in death losses of \$126,477 and a net saving over expenses of \$77,577. The group examined show a mortality experience of 53 per cent as against the American experience table, and a 72 per cent record on the American Men table. It is shown that the mortality has been reduced at a cost of \$1.36 per policy holder per year, and that the net profit to the company on that expenditure is \$2.16 per year, or a gain of 159 per cent on its money invested in this work. Even in boom times 159 per cent is a handsome profit in industry. These figures merely suggest that if people are worth saving, society at large is overlooking some very handsome dividends.

Absence in industry on account of illness varies from 3 per cent to 8 per cent. Industrial medicine can reduce the absence on account of illness to 1½ per cent, perhaps even lower. Accepting the lower figure of 3 per cent as the normal and 1½ per cent absence as the attainable through medical supervision, we should save for each worker four and a half days of earning power each year. The 11,800 workers who made nearly 107,000 visits in 1920 to the seven industrial medical departments, were diagnosed early, sent home when in-



### **YOUR FRIEND "The Eye Picker"**

*A well meaning workman with greasy hands, soiled rag, dirty tooth pick, or some other pet pick, makes a stab at the foreign particle endangering your eye to infection.*

*Your handy friend won't look so good to you when your eye goes blind.*



## Scrap Bad Tools

Cracked dull, mushroomed, broken or worn out tools cause

**7% OF ACCIDENTS**

A flying chip may cause the loss of an eye.

Soldiers never go to battle with faulty arms.

Workmen using worn out tools, take chances for-bidden on the battlefield.

capacitated for work, advised to consult their family physicians, and where necessary, referred to specialists. These 11,800 workers, saving 4½ days each at an average wage of five dollars, would experience a total saving of \$265,500.

Abscessed teeth and infected tonsils, as the source of focal infections responsible for many chronic rheumatisms, lowered vitality and chronic illnesses, have received a great deal of attention on the part of the medical profession within the last few years. Many individuals by proper procedure in this direction have been restored to their former efficiency. The installation of industrial dentistry has provided some new comprehensive data as to the neglect of teeth by the average worker. Of the 3,300 employees examined in 3 plants, 45 per cent had never visited a dentist. The cleaning of their teeth by the industrial dentist, the pointing out of dental work needed to be done and the interest that was stirred in mouth hygiene was most valuable. In many cases it was the beginning of the workers' interest in personal hygiene. Here again industry is doing for the adult what school dental hygiene is doing for the child. Here again, the accessibility of dental serv-

ice to the individual brings the patient to the dentist far earlier than would otherwise occur, and thus preventive measures are made possible.

The intelligent, socially minded nurse should be a great force in better relations. Under wise management she is solely responsible to the medical officer of the plant. As such she will preserve all the best traditions of her profession and that of the medical men in her relations to the patient. She should possess common sense and initiative to no uncommon degree so that she may at all times preserve the best of good will between patient, plant physician and private practitioner.

The numberless records of observations made by the plant physician, his physical findings extending perhaps over years, his temperature and symptom readings just preceding the patient's acute illness should, through the nurse, prove of great advantage to the family physician. She can further assist him by such hourly nursing service as he may desire and thus hasten the patient's recovery. The nurse, through her daily visits at the home, keeps management and fellow employees apprised of the patient's condition. She will frequently serve him best by insisting on a prolonged convalescence when the patient might unwisely seek to come back on the job. She further may, in some instances, protect the patient's record in the shop from the suspicion that he has remained home for causes other than illness. Her many possible services to the wife and children in the home in the way of incidental instruction in matters of diet and other hygiene problems are beyond enumeration and may save the cost of a full time nurse to the family.

There are probably thousands of deserving ex-service men scattered over the country who have failed to prove their just compensation claims because they were unable to supply affidavits which set forth in detail their physical conditions previous to entering the service. Their condition of health after discharge and then upon entering their old jobs or professions were not noted by anyone except in cases where they applied for employment in industry where medical supervision and physical examinations obtained.

The average family physician rarely has complete data in the matter of physical examination, and unfortunately too frequently his prescriptions are written without entering a record as to symptoms and findings at that time.



## Soldiers' Compensation

EX SERVICE MEN  
FIND THE

**Complete Medical Records**

*kept during their employment before and after army service by*

**INDUSTRIAL PHYSICIANS**

*of*  
**Great Benefit**

*in supplying*  
**War Risk Bureau**

*WITH*  
**Proper information to obtain**

**SOLDIERS' COMPENSATION**

The Government requires definite information of this kind in order to connect disability with service. These facts as well as the one that young men rarely take the matter of health seriously enough to consult physicians frequently, made it difficult in thousands of cases for the deserving ex-service man to bring proper proof to the Government.

The accessibility of medical service in industry has educated employees to concern themselves more frequently about their so-called minor ailments, with the result that there is a multiplication of medical observations and records in industrial medical departments away beyond that made by the private physician. A good deal of bad blood has been spilled by the ex-service man because of the endless red tape and delays which he feels has surrounded the Government's determination to get accurate data before allowing medical treatment, vocational training and compensation. The well organized industrial medical department made smooth sailing for many of the deserving applicants who had no other definite source of information on which to base their required affidavits.

# Industrial Surgical Service—Past, Present, Future

## Adequate Service Does Not Stop Short of the Utmost Effort Toward Functional Restoration

By J. ROLLIN FRENCH, M.D., LOS ANGELES, CALIF.

**I**NDUSTRIAL surgery is rapidly becoming recognized as a specialty—justly so, and no doubt the so-called "Company Doctor" of the past will soon exist only in memory.

Not long ago, the idea was general that treatment rendered the industrially injured was for the express purpose of satisfying public opinion, little concern being given to rehabilitation and functional results. The "Company Doctor" was one who would accept the position at the smallest salary, and his main duty seemed to lie in speedily removing the patient as far as possible from the place of employment. It may be readily seen that in such a regimen there was little incentive to stimulate technic and modern means of therapy for functional rehabilitation.

Amputation was often recommended to shorten the period of treatment. The healing of the wounds and fractures was not followed by therapy of any kind, and the permanent disabilities were enormous in proportion. As a matter of fact, limited function was anticipated just as was "laudable pus" before the days of Lister.

### Better Standards Develop

The compensation laws of today perhaps may be given credit for beginning stimulation in developing industrial surgery, and no doubt the recent war also added materially to the development of modern technic and therapy. Conservation of man power was a subject of greatest consideration, hence our eminent surgeons directed their attention toward the subject of rehabilitation with functional results, which gave us the foundation for our present therapy. Industries soon began to recognize the direct financial benefit of the better service, not only in the reduction of employment turnover costs, but in a diminution of the expense of permanent and prolonged disabilities, which had been automatically charged against the employment account in compliance with the industrial accident laws.

That the percentage of industries recognizing this fact is still comparatively small is, in my opinion, to

be charged directly at the door of too little stimulation along the line of better surgery in industry. Because of it, many employers are still laboring under the prejudice of the antiquated ideas of the past.

As above stated, rehabilitation was stimulated by the war, and as soon as the fighting was over and the patriotic duty had terminated, the advancement in reconstructive surgery was materially retarded by the surgeons returning to their civil practice. A few, however, continued with the work of rehabilitation in industry.

It may be that one of the greatest reasons why a greater percentage of surgeons did not take up the work of industrial rehabilitation was because of the stigma attached to the old-fashioned "Company Doctor." Not only to the medical profession did the "Company Doctor" signify the cheapest kind of medical service, but he was reluctantly accepted by the employee and was, at the same time, exceedingly expensive to the employer.

### Exit the "Company Doctor"

The specialty of emergent orthopedic surgery, as pertaining to industrial accidents, was not sufficiently recognized to stimulate the interest it now commands. Fortunately, however, some of the better schools of medicine are recognizing the special applications of traumatic surgery and are now including industrial courses in their curricula. No doubt in the near future our post-graduate schools will be in a position to render industry a great service by offering graduate courses in industrial surgery, thus officially recognizing the specialty and automatically doing away with the so-called "Company Doctor," who has no knowledge of and little interest in the modern treatment of the industrially injured.

The demand for better treatment in industrial injuries is steadily growing more urgent, but, due to the dearth of special training in the past, this need has not been met. The efficiency of each organization has so far been limited to the initiative of its chief surgeon. In time to come, the results of the service will be expressed in units of service demanded,

classified according to the laws of the respective states, and in some degree influenced by the public opinion of the particular locality, and the attitude of the employer.

It is extremely gratifying to note that the employers are in most instances ready and willing to improve their service when definite facts demonstrating better service are presented.

Industry is dependent upon the reports of industrial surgeons for advice relative to the facts and physical findings of its injured. If such reports are rendered by surgeons who are not qualified by experience and training in this specialty, and lacking the necessary knowledge of law and contract, they are likely to be misleading, and in such event industry is either wrongfully charged with that for which it is not responsible, or it may be that the injured man is unjustly classified as a malingeringer.

Unfortunately, the term malingeringer has been used without qualification, and no doubt too frequently applied indiscriminately to patients who have not returned to work. As a matter of explanation, I will modify the term, defining true and false malingeringers.

No explanation, however, is necessary in the case of the true malingeringer; we know he is encountered, though not nearly as frequently as is often accredited. Not seldom does a careful analysis of a so-called malingeringer result in the disclosure of many facts that have been overlooked by inexperienced or unqualified investigators, and that further treatment is in reality necessary. In the past it has been generally assumed that a man should return to work as soon as his wounds were healed, and no responsibility was assumed for subsequent treatment to bring about the best possible functional results.

The false malingeringer is frequently seen and he presents one of the greatest problems associated with industrial injuries. I refer particularly to a false interpretation of existing symptoms: for example, the surgeon may be right when he advises a patient to return to work, but, because the surgeon does not deem it necessary to give the injured man a detailed ex-

planation of his case, the latter refuses. The patient groundlessly anticipates that by following orders he may do grave bodily harm to himself instead of achieving a complete restoration of function. These patients are materially benefited by occupational therapy. In other words, a survey of the mental attitude of the patient reveals the fact that he has the idea that if he returns to his usual occupation, detrimental results will follow, but if concessions are made and certain work is prescribed as a part of the therapy in his case, he will willingly do as directed. It may in some cases be necessary that his duties be camouflaged so as not to seem a part of his regular work.

### Interest is Enlisted

Occupational therapy seems to be the only practical method of camouflaging work. Unfortunately, few authorities seem to recognize this point, which, in my opinion, is the link between success and failure in a large percentage of cases, and must be administered with a sincere desire to stimulate the cooperation of the patient.

In prescribing occupational therapy, one of the principal points to bear in mind is the practicability of the prescription; in other words, it must be ascertained in what the patient is interested. If the patient has a child at home, he will probably manifest enthusiasm in making a toy; or a young man might be readily induced to weave a dresser scarf for his sweetheart; or a devoted husband interested in making some bric-à-brac to beautify his home. On the contrary, however, if work is prescribed which is not of interest to the patient, cooperation is frequently wanting and the results are far from pleasing. The prescribed work should always be something which exercises the injured member. The lack of proper discrimination on the part of the surgeon results in poor treatment. It is just as important to have the ability to treat psychic disturbance as it is to have the proper technic for actual surgery, and until this ability is inculcated in one and the same person, or in one and the same organization, the problems of industrial treatment will not be solved.

In the past there has been no organized effort toward the systematic treatment of the industrially injured by any means other than the routine surgical procedures and massage. Many of our larger industries have developed their surgical service to a

degree of perfection, but the efficiency of the department is materially handicapped because they are satisfied to confine their work to the surgical unit. Custom and satisfaction with a partial service are the greatest stumbling blocks of progress and efficiency.

In many instances cases drift into the hands of unskilled doctors and are not called to the attention of a skilled organization until the basis of a permanent injury has resulted. Unfortunately, all doctors "look alike" to the layman, and not infrequently the doctor builds up his business by eloquent oratory instead of proving his merit by the functional results obtained.

In some states, through their compensation laws, it was held that the injured employee was greatly favored by permitting him to choose his family physician. As a matter of fact, such measures actually wreck the intent of the law by encouraging less efficient treatment. In other words, there is no incentive in such legislation for the employer to develop systematic treatment and thorough organization.

It is indeed a pleasure to visit the hospitals and surgical departments of a few of our industries and note the results of modern therapy, stimulated through the sincere desire to put into practical application the intent of industrial laws, and a survey of these organizations demonstrates the financial return to these employers.

### Problems in Small Plants

One of the greatest problems of industrial treatment today is the care of the injured from the small industrial organizations, who are not individually able to maintain a complete medical organization. The industrially injured of these corporations frequently suffer for the want of proper, organized treatment. The cost to maintain service in the individual plants would be prohibitive, but by cooperation and establishing a centralized organization the same efficient service may be rendered.

Surgeons frequently differ relative to the surgical treatment appropriate in an individual case, and not infrequently criticize each other upon certain methods of a surgical operation, or remedies used in treatment. Such differences of opinion, however, are only a matter of detail and we must remember that there are not infrequently two roads to a given point, and perhaps both are equally good. Avoiding this detail, I wish to present a logical outline for organized and

systematic treatment for the future.

One of the first problems confronting us is the atmosphere of prejudice propagated by an employee against the medical treatment offered by his employer. Many of the older employees have memories of ill treatment that was by no means imaginary on their part. This, of course, has automatically reflected upon all company service, has operated to prevent a larger percentage of the better surgeons from identifying themselves with industrial surgery.

The compensation laws of some states have grasped this situation and perfected a remedy—namely, to give the employer the opportunity to furnish efficient medical treatment and demand that the employee accept same unless good cause for refusal can be shown. This gives an opportunity for employers to build up a splendid treatment organization, with the result that the injured employee receives the best possible treatment. When the employer fails to render proper treatment, the employee may seek treatment at the employer's expense; thus, the employers who conscientiously intend to render better treatment, may be protected. At the same time, the employee is protected against that class of employer who gives little or no thought to the personal feelings of the employee, or his future physical efficiency.

The question invariably arises: "What is adequate treatment?" The attempt to answer this query usually results in a discussion of the relative merits of specific operations or treatment, and because of pre-existing prejudice, the employee questions the motive of the medical organization of the employer. As soon as the employee is educated to the fact that the employer is conscientiously tendering the best service, these petty arguments will automatically be eliminated, as has already been demonstrated by the employers who are rendering the best service.

Adequate treatment can only be defined as complete service. Service does not necessarily signify luxury, but should signify every reasonable consideration from the time of the accident until the employee is reasonably able to return to his usual, or some other remunerative employment. It is the application of this principle which will represent the service of the future. The only way this can be properly accomplished is through the sincere and conscientious efforts of a qualified industrial surgeon, unhampered by laymen's selfish opinion, and through an efficient medical or-

ganization, departmentized so that the treatment of the individual injured will automatically be referred to the department which can accomplish the most toward functional rehabilitation.

### A Case in Point

To illustrate this point: A competent surgeon may operate a case, but because organization is wanting, massage and occupational therapy are delayed until the service of the surgeon has been completed. This, in many instances, is too late to obtain the best functional results. In such cases the surgical treatment should be supplemented by the work of other departments before the surgeon's dressings are ready to be removed. It follows that, if the surgeon has not at his command the necessary correlated departments, the functional results for the patient will be impaired even though the operative procedure was successful.

Good surgery does not represent more than one-third of what may be considered as adequate industrial accident service. When this fact is more generally recognized, therapeutic organizations will be departmentized, each specializing in its respective service. Such units of service, however, are not practicable unless there is a volume of work of a given kind. On the other hand, cases in sufficient numbers to justify such service will not be forthcoming until the industrial work of the community is centralized. This will not take place until the need, and the efficacy of physical therapy have been demonstrated through thorough organization. If better treatment is instituted through thorough organization, cases will then be segregated and referred in sufficient numbers to justify the special services necessary.

The treatment of the future will include every practical means of assisting the industrially injured to a speedy recovery, which will permit reasonable competition in earning a livelihood. In addition to the surgery, which includes the reasonable allied branches, such as ambulance service, hospital, subsequent dressings, etc., we must welcome every possible means of assistance to further this end. Practical exercise and training, occupational therapy and social service work, and, in some instances, re-education, are all stepping-stones to ultimate recovery.

If the reconstructive surgery, supplemented by proper subsequent therapy, is conscientiously adhered to, comparatively few cases will call

for re-education; hence practical social service work will supervise re-education through the schools which already exist, either private or public.

Practical results can be estimated only by a survey of the individual cases. In many instances, a psychological diagnosis, supplemented by practical treatment, either psychic or physical, will contribute as much, if not more, than surgery toward establishing functional results.

Compensation features must not be overlooked, which may include the proper reporting of cases and prompt payment of compensation benefits. Attention to this detail adds much to the service and assists in preventing neurosis. It can be readily perceived that the prompt receipt of compensation and other benefits tends to preserve a proper mental attitude and eliminates the possibility of the patient becoming a victim of worry concerning the maintenance of himself and family. When the patient receives prompt attention with regard to his benefits, a spirit of cooperation is promoted, with the result that convalescence is usually uneventful and not unduly extended.

### Service Twofold

While organization for the treatment of industrial injuries will be maintained presumably for the express purpose of rendering service to the industrially injured, it must not be overlooked that there are certain services which are due the employer in order to protect him from the malingerers. In rendering this service, not only is the employer served, but the morals of the employee are safeguarded by limiting the bragging propensities of the malingerer of his success in obtaining money under false pretenses.

In organization lies the only hope for better treatment. This automatically standardizes routine and necessarily stimulates closer attention to detail. It is this minute attention to the combined findings of the various departments carefully recorded, which assures an accurate diagnosis, and renders treatment only a matter of application of surgical skill, supplemented with various forms of modern therapy to assist in accomplishing functional results.

The treatment of the future will result in the discarding of customs which have become antiquated and consist of applied standardized routine treatment made possible by organization. It will incorporate all modern therapy which tends to assist the injured member to an early re-

turn of function, not overlooking psychic as well as surgical treatment. Experience is witness to the fact that diplomacy on the part of the attending surgeon frequently adds as much to the functional results as other actual treatment.

The surgeon in charge must have a constructive and susceptible mind, capable of weighing the hundreds of problems which confront him. Not only must he have the ability to suggest the treatment which is applicable to the particular case; he must also be able to make a psychological diagnosis of the antagonistic patients and be resourceful enough successfully to change the mental attitude.

These qualifications must be manifested in one and the same person, or one and the same organization, to accomplish the results anticipated in the future.

### Formulates Program for Preventive Medicine

In formulating a tentative program for preventive medicine, Sir George Newman lays down ten principles: eugenics, maternity care, infant welfare, health of the school child, general sanitation and hygiene, industrial hygiene, prevention of communicable diseases, prevention and care of non-infectious diseases, public health education of the people, and research.

With reference to eugenics, he places its principles at the beginning of all effort. Environment, infection, accident and disease all have their effects on man, but it is his own body that must furnish the basis of health. His body should be sound. Since heredity cannot be ignored if we are to grow a sound and healthy race, the breeding must begin, where all breeding begins, at the source. "If we permit ourselves," says this great English administrator, "to favor and provide for the unguided propagation of a population of poor physique or of persons marked from birth with the stigmata of alcohol, venereal disease or mental deficiency, we shall sooner or later discover that we are building on false foundations."

A complete plan for maternity care should include: adequate medical, midwifery and nursing service, sufficient and satisfactory nourishment for the mother, maternity centers, maternity home and hospital facilities, domestic aid, maternity benefit and, if need be, financial aid and notification of births, including still births. The problem is vast in the application of remedies, but these are important in the rearing of a nation that is to hold its own.

## Recent Compensation Decisions

THE matter of posture during work and resulting neuroses has been passed upon recently by the Supreme Judicial Court of Massachusetts. In the case under discussion the employee was a cigar maker. Early in 1918 he began to have pain in the region of the back of his neck, and in February or March, 1919, he consulted a physician who told him that he had to give up his work. The entire opinion will not be given here. The decision rests on a previous case, *Mageelet's Case* 116 N. E. 972.

While the Board found that the neuralgic pain was induced by muscular action in rolling cigars for a number of years, the impartial physician testified that any other occupation was likely to cause the pain from which the employee suffered, and that this condition could result independently of any occupation. In view of this, together with all the other evidence, we are of the opinion that the pain could not have been found to have been a reasonably necessary result of the employment, and cannot be said to have been a personal injury peculiar to it. We are also of the opinion that there was not sufficient evidence to warrant a finding that the employee had neurosis—a disease with which cigar makers are sometimes afflicted—and the impartial physician so testified; nor is there evidence that he had any disease, the reasonable inference being that the neuralgic pain was not due to his occupation, but was rather the result of faulty posture brought about by long and laborious work, a condition which would have been equally liable to arise in whatever employment he might have been engaged, or if not employed at all.

The Court goes on to say:

If it could be held that the employee was suffering from an occupational disease, still the Workmen's Compensation Act does not in terms include disease. (Stat. 1913, C. 813, Sec. 12). It cannot be held to cover disease contracted by employees in the course of and arising out of their employment. Pain is not disease, nor is disease resulting in pain a personal injury.

Acts 1913 C. 813, Sec. 12, Subd. d, reads: "The terms 'industrial disease' and 'occupational disease' shall mean and include any ailment or disease caused by the nature, circumstances or conditions of the employment."—*Pimental's Case, Supreme Judicial Court of Massachusetts, May 22, 1920, 127 N. E. 424.*

WHERE an engineer died of heat stroke suffered while in the heated engine room during working hours on a hot day, death was caused by an accident arising

out of the employment within the Workmen's Compensation Act according to the Supreme Court of Illinois. In the opinion of the Court:

The Commission made findings that the deceased, while in the performance of his duties, suffered a heat stroke which was superinduced by the excessive amount of heat in the room in which he was working, and there was evidence to sustain its findings. The heat stroke occurred in the course of the employment, and there was evidence from which the Commission might reasonably conclude that it arose out of the employment. The man was overcome by the heat in his employment, and because of it, he was exposed to a degree of heat beyond the ordinary temperature of the day. While it cannot be demonstrated that he would not have been overcome if he had not been at work, the fact is that he was overcome under circumstances which furnish an adequate cause for that result, and neither the commission nor the Court will indulge in conjecture as to what might have happened under other circumstances. He might have died from the heat of the day if he had stayed home, but he did not, and he did die from the heat of the day and the additional effect of his work and the artificial heat of the engine room.—*City of Joliet v. Industrial Commission, 26 N. E. 68.*

A PAINTER who was standing on a ladder, fell suddenly as a result of an attack of vertigo. The Appellate Court of Indiana has held that the injuries causing his death resulted from an accident "arising out of his employment and not from a disease," and compensation under the Workmen's Compensation Act was held to be allowable. The Court further remarked here that where the Industrial Board has found that the death of an employee was the result of an accident which arose out of the employment and was within the Workmen's Compensation Act, this finding will not be disturbed by the Courts where there is evidence to support it.—*Board of Commissioners of Green County vs. Shertzer, 127 N. E. 843.*

THE Supreme Court of Iowa has held recently that although a bruise arising out of and in the course of employment was slight and would not have resulted in prolonged disability except for the fact that the claimant had latent gonorrheal trouble, where evidence is submitted that "hidden gonorrheal trouble can be lighted up by a bruise," a finding that the injury was the proximate

cause of the disability was warranted. The Court said in this case: "What is claimed for is injury as inflicted by the accidental slipping of the hammer and the natural consequences flowing therefrom and traceable thereto, and, as said, this might have been found by the Industrial Commission to be the lighting up or accelerating of a dormant disease. The claim is not passed on the disease, but on what the bruise did to the disease."—*Hanson v. Dickson, 167 Iowa 66; 176 N. W. 823.*

THE California District Court of Appeal made the following decision and a hearing on the case was denied by the Supreme Court September 1, 1921. In view of the two cases just quoted, the logic of the distinction "arising out of employment" may be questioned. The Court in this case dismissed the matter of horse play, holding the cases not pertinent where a claimant was injured in the scuffle with a subforeman who was acting outside of his authority in attempting to discharge the claimant, the injury did not arise out of employment, so as to warrant an award of compensation.

The facts of the case are stated in the findings of the Commission. "Applicant was one of a small group or gang of high school students hoeing weeds under hire of defendant city during vacation, under immediate direction of Frank Wood, a student of about the same age as applicant; that said Wood did not have authority to discipline or discharge any member of the gang, and applicant so understood; that said Wood under pretense of same authority, purported to discharge applicant for some alleged breach of rules, and attempted to take away from applicant the latter's hoe, Wood being entirely the aggressor; the applicant resisted, and in the ensuing scuffle he sustained injury to his left ankle. . . ."

The Commission granted an award of \$106.81, which was annulled by the Court.—*City of Pasadena v. Industrial Accident Commission of California.*

A SCHOOL teacher, carrying on chemical experiments prescribed by the Education Law, is not engaged in "hazardous occupation," within the meaning of Workmen's Compensation Law, under Const. Art. 1, Sec. 19.—*Beeman v. Board of Education of Penn aYn, 187 N. Y. S. 213.*



# INSTITUTIONAL HEALTH

*The Health Problems of Schools and Colleges, Hotels, Summer Camps, Children's Homes and Homes for Dependents*

## The Work of Fatigue Elimination in Colleges\*

Pioneer Work in this Field Was Initiated by  
Professor George F. Blessing at Swarthmore College

BY FRANK B. GILBRETH AND L. M. GILBRETH, MONTCLAIR, N. J.

AS EARLY as October, 1917, Professor Blessing wrote us telling of his interest in Fatigue Elimination day and of his plan to celebrate it at Swarthmore College, where he was Professor of Engineering. This was the start of what was up to the time of his death a most wonderful participation on his part in Fatigue Elimination work. On the first Monday in December, Professor Blessing carried through the first Fatigue Elimination Day at an American College. At the December meeting of the American Society of Mechanical Engineers he told us of the interest taken by the students and the faculty in the plan that he worked out, and later, at our request, wrote us a description of what was done. We quote his letter to us dated January 1, 1918, accompanying the short informal manuscript which shows his inherent modesty and explains his writing the article in the third rather than in the first person:

Under separate cover I am forwarding you some rough notes on the work we did at Swarthmore College December 3, 1917. I have tried to put the matter in a rather popular form and in such shape that you can easily recast it into a story for the *Independent* if you consider it of sufficient value.

You can see that it is difficult for me to write the story of Fatigue Elimination Day at Swarthmore without figuring too prominently in it myself to be the author of the article. I do believe, however, that good can come out of what we did if it can be given proper publicity. Other colleges are sure to take it up and the

educational world is not without its influence.

I believe I am doing pioneer work in giving the "Human Element" a prominent place in an engineering course. . . .

We found his story of great value, but at that time the popular interest in fatigue elimination was not sufficient to have this value generally accepted. However, we make no apologies for printing the article now. It speaks for itself. It illustrates not only what can be done simply and quietly and without expense to mark Fatigue Elimination Day and to hold the attention of an entire college, but it illustrates also the sincere, modest, practical character of the man and the vision which made him see that the little start he made at Swarthmore would grow into the big thing that the Fatigue Elimination Movement is today.

No monument to a man is as great as the memory of the good deeds he has done, and it is in order that the memory of Professor George F. Blessing's work for Fatigue Elimination may live that this article has been incorporated in the Proceedings of the Society of Industrial Engineers of whose Committee for Fatigue Elimination he was an honored member.

### The Story Follows

The public is more or less familiar with the part played by athletic contests, fraternity dances, and pink teas in offering an outlet for excess energy on the part of a certain class of college students who do not find it necessary, or else have not the inclination, to give the professor and

his intellectual specialty all they have.

Students of the "motive" type seem to be so constituted that they require some "outside activity" to put a side of their nature on trial that studies do not reach. They crave something with more of the human touch to it than lectures and text assignments. Also, it must test out their managerial ability, and give them the complete responsibility for failure or success.

To meet this demand and so direct the students' energy into legitimate channels, the college authorities have looked favorably upon the many "student activities" that the public are sometimes inclined to criticize, as being a waste of energy and without educational value.

The fact probably is that one reason that college hazings, midnight raids, "beer busts" and immoralities have very largely disappeared from American College life is due to the college authorities encouraging almost any activity that keeps the student within reasonable and honorable bounds.

To make a college function, however, out of an industrial movement comes somewhat in the form of an innovation. Yet this is what recently took place at Swarthmore College.

It happened that one morning in the latter part of November (1917), the Professor of Engineering at this institution addressed the students at the morning devotional exercises on Fatigue Elimination Day as adopted by a number of industrial concerns throughout the country. At the conclusion of his address he stated that

\*Read before the society of Industrial Engineers as a part of the report of activities of the Committee for the Elimination of Unnecessary Fatigue.

his class in "Social Engineering and Industrial Service" would, on patriotic grounds, join hands with industry, and, without interfering with classes, would observe December 3 as Fatigue Elimination Day by making a Fatigue Survey of the college as an institution, and by preparing an exhibit of fatigue eliminating devices to be placed in the Engineering Library.

Later, when the person in charge of arranging the exhibit asked Professor Blessing for something to start the exhibit he was given a worn pair of rubber heels and a home made alarm clock device for turning on the draft of the professor's furnace. The thing was started, however, and the whole idea seemed to take strongly with the class, the result being that in a very short time the "motive men" and women,—for this class is open to women—were planning, working for, and looking forward to Fatigue Elimination Day as though it were of as much importance as a football game, a dance, or a Soph. Show. The survey was turned in as a report in the class in "Industrial Service," and it included a study of the student himself, as well as of his most liked and disliked professors. Always, however, the spirit was very constructive, as this had been very clearly pointed out as the necessary element in making the work a success.

### They Catch the Spirit

The Junior students in Mechanical Engineering looked up fatigue eliminating devices, and then designed and made such as they considered would fit their own cases. The Freshmen in shop courses made several Gilbreth fatigue eliminating chairs for the exhibit. Letters were written to makers of efficiency and fatigue eliminating equipment telling them of the exhibit, and inviting them to send samples of their product for exhibition purposes. Considering the rushed and unsettled condition of business, the response to these letters was surprising. A number of firms with branch offices in Philadelphia asked for the privilege of sending representatives to demonstrate their wares, and this request was granted in about half a dozen cases, with the understanding that no orders would be solicited. This, however, was unnecessary, as the equipment was not of the character that the student would want to purchase at the present stage of his career. These companies were looking to the future, for, as one representative said, "Our company realizes that the college students of today are the purchasers of tomorrow."

On the morning of December 3, at the morning Assembly, Professor Blessing again addressed the student body, explaining in detail how fatigue affected the worker and what had been done to eliminate unnecessary fatigue. Gilbreth's seven causes of unnecessary fatigue were given, and illustrations as to where they might apply to the students' life given. At the conclusion of the address it was announced that the Fatigue Elimination Exhibit in the Engineering Library would be open to visitors throughout the day.

As one entered the library referred to, the first thing that met his gaze was three advantageously placed flags, and beneath a well lettered legend, "Patriotic Duties."

**FOOD IS THE FUEL THAT PRODUCES HUMAN ENERGY—SAVE IT.**

**UNNECESSARY FATIGUE IS THE WASTE IN THE HUMAN POWER PLANT—ELIMINATE IT.**

**HUMAN ENERGY WILL WIN THE WAR.**

Below this was, "GILBRETH'S SEVEN CAUSES OF FATIGUE":

- (1) Confusion of issues. Define them clearly.
- (2) Improper assignment of work. Reassign.
- (3) Poorly distributed rest periods. Study them.
- (4) Bad working conditions. Clean them up.
- (5) Inappropriate clothing. Change it.
- (6) Lack of anti-fatigue devices. Procure them.
- (7) Lack of public interest. Arouse it.

No sooner had one read this legend than he was taken in charge by an instructor of the department who marched his group to a point where fatigue charts were displayed. Here the nature of fatigue was explained, and the fatigue cycle was shown by means of a chart,—how, in the beginning of work, during the "warming up" period, the working power at first diminished and then picked up until it reached a maximum value, which was sustained during a certain period of time, after which the working power dropped off rapidly unless at the proper time a rest period was taken. It was then pointed out that if this rest period was properly determined and used, the working power returned to practically its original condition. "This," said the instructor, "is what Dr. Taylor did with Schmidt, when he caused him to carry forty-seven tons of pig iron a day instead

of twelve and a half, and sent him home less fatigued with his big day's output than the small one." "Don't waste any sympathy on Schmidt," he cautioned. "You remember how it was done. Now pick up a pig and walk. Now sit down and rest. Now walk, now rest. You see every time his energy condition reached this point on the chart he was told to sit down and rest, and if you understand this chart, and how Schmidt was raised from a twelve and a half ton capacity to a forty-seven ton capacity you understand one of the big principles of scientific management."

### Fatigue Curves

Then curves showing how fatigue compounded throughout the work and throughout the day were shown. "Those week-end parties don't do a thing to us," a student was heard to say, after looking over the weekly compounding curve. "I understand now that science backs up the coach when he makes us work out before taking another fellow's place in the game," said another. "Yes," repeated yet another, after having the fatiguing effect of noise explained, "there's going to be less noise during study period in our section of the dormitory from now on, or trouble for the rough-houser."

The effect of bad lighting and examples of good and bad lighting arrangements were shown. A fine collection of shades was brought on from the electrical department, and the Professor teaching illumination gave a talk with demonstrations. The effect of pure air in overcoming fatigue was told, and home made ventilators that gave ventilation without draft were on exhibit. An efficiency desk was explained and demonstrated by a representative of the maker, who also answered the students' questions as to how to eliminate confusion, systematize their desks and do their filing most efficiently. A properly arranged book shelf served the double purpose of showing how the student should avoid confusion with his books, and also gave an opportunity to look over six or eight books on Fatigue. A table contained many simple devices to act principally as hints for the student in eliminating unnecessary fatigue in his every day tasks. One especially interesting feature to the engineering students was the mechanical computing section, they realized the fatiguing effects of the ordinary arithmetical operations, and appreciated the value of mechanical aids. Every mechanical computing device in the department from loga-

rhythmic paper stunts, slide rules and computing watches to electrically driven computing machines were on exhibit, and demonstrated by an instructor. Besides these, four computing machines were on exhibit, and demonstrated by a representative. It was found that as soon as an Engineering student had an hour free he returned to this section, and many and heated were the arguments they held as different ones championed different makes of machines.

Much interest was displayed over a well arranged lot of photographs il-

lustrating the experiments of the Gilbreths, wire models to illustrate chronocyclographs were shown, and several forms of chairs came in for many trials and much discussion. Professor Blessing, in talking of the exhibit, said that it had proven several things: First, that students will take an interest in an outside activity that connects their college life with industrial life as readily as in one that has very little practical or educational value. Such efforts have a tendency to vitalize the work of the class room, and many valuable les-

sons could be brought into the college life from industry by this method. It causes the student to think more seriously of his college education, as a preparation for life, and gives him something besides athletics, dramatics and social affairs to discuss during his hours out of class room. Business houses are glad to cooperate in such work.

Fatigue Elimination Day now has a permanent place on the Swarthmore College calendar. It is a full size college function! Efficiency has acquired new interest and a broader definition.

## Process of Building Up Our National Resistance

### The Neural Strain Incident to School Life Removed by Open Air Conditions

By WILLIAM E. WATT, A.M., PH.D., CHICAGO, ILLINOIS

**WE KNOW** what happens to a kitten in a sack with a stone when dropped off the bridge. We have our opinion of a family in the slums who let the baby get a high temperature before calling the doctor and then fail to follow his advice, although the father seems to have a clear conscience when he says, "God took 'm."

The usual schoolhouse is overheated and lowers resistance so that some children die quickly, some are doomed to a life of misery, and some merely blanch and weaken. Is anyone responsible for death when it comes from doing the usual thing?

No intelligent mother now attempts to bring up a babe indoors. She gives it fresh air—porch sleeping by day, use of cab, walking, riding—and cold air at night. There is no question as to the benefit. In advanced cities there is the fresh air room in the public school, with costly equipment of Eskimo suits, foot warmers, special feeding, sleeping chair, etc., for anemic and pre-tuberculous pupils. There children hurt by school recover strength, health, and vivacity until they are returned to the regular schoolroom. Of course there are not accommodations for one-tenth of the children who need it. There is a long waiting list of sufferers.

#### Arid Conditions Indoors

Open-air is generally prescribed for children and adults who are unable to cope with the conditions in home and school when heat is applied. Either the patients go out-

doors and brave the rigors of winter or they travel to some region where they may be warm and live outdoors day and night.

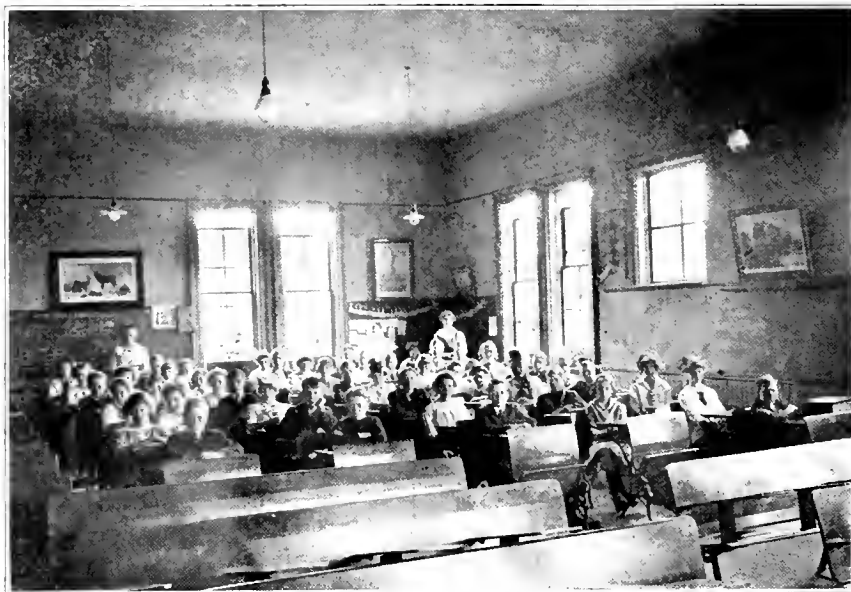
Yet with all this knowledge of what open, natural air does to benefit mind and body, the bulk of our citizens are dangerously weakened by the aridity, overheat, drafts, dead-air pockets, and other insanitary conditions of bad indoor air, even in supposedly perfect ventilation.

In the fall they come back from vacation in the country or in the city streets and alleys where red blood has been made and vigor accumulated, and enter school. In the spring all

are weakened, some have succumbed to disease, some are seriously enervated and the general alertness of all has been greatly impaired. Many fail to make their grade. Their grief is made more poignant by publicity. The teachers must spur them on! They tell the world—the child's whole world! And nobody seems aware that natural air would in most cases have averted the catastrophe.

#### Some Run Away

In spite of the many excellent qualities of modern education, it often happens that the child who has stamina enough to run away from school



This shows the disposition of window openings in the corner by a warm, open-air assembly room.

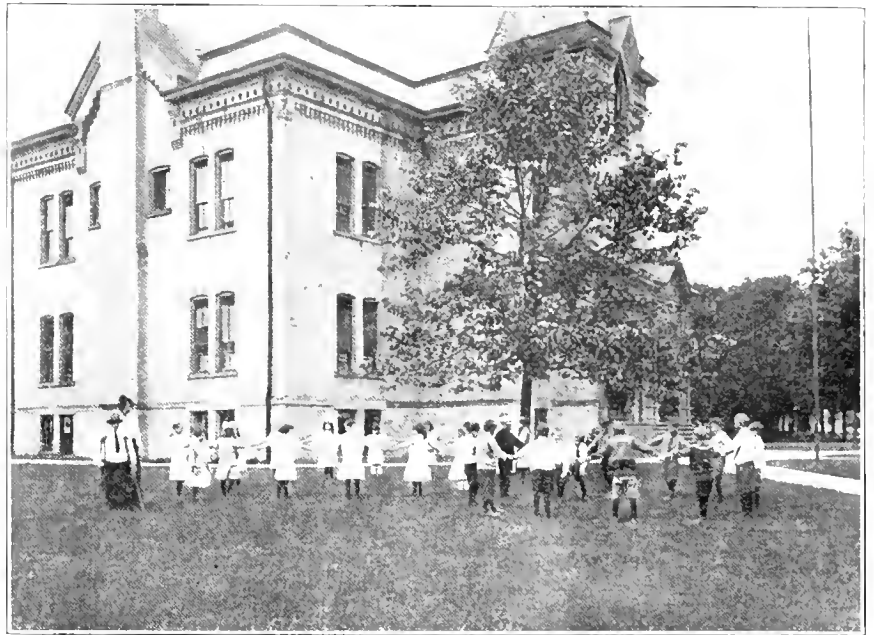
and keep out of the smell of overheated air is a gainer in the long run, although the law pronounces him a malefactor. Many children never see a well day after the fans start in the big schoolhouse. Glands swell and suppurate, stomachs balk, nerves get jumpy, night terrors are frequent, and many bright children are led to believe they are dull—born short—unable to do the stunts of their grade. Yet give these children air and they begin to live again. The school wilts them, but they can be resuscitated, if taken in time.

Children are not the only sufferers. Few teachers—very few—are sound after twenty years in school air. Life insurance companies put teaching down as a hazardous occupation, next to saloon-keeping and marble-cutting.

### Resuscitations Made

We took a group of pre-tuberculous and anemic children to a vacant school lot one summer. A tent, sleeping-chairs, and food were provided. Teachers were paid to entertain them. We told the children their minds would gain strength with their bodies and, if they wished, the kind teachers would help them understand the school things that were hateful to them.

In five weeks those children gained knowledge so they were promoted when they returned to regular school in September. The average gain was six months of school work. Knowledge which had been too high for them became simple. Instead of trying to spur weak children on to more



Work under natural conditions is exhilarating. Physical stunts outdoors between intellectual stunts indoors are a safe procedure.

endeavor, why not fill them up, energize them with good air, and let Nature spur them?

Then we opened two fresh air rooms in a public school—fresh cold air. Pupils were not to have foot-warmers or feeding, but were to be allowed to wear caps and mittens in school and furnish their own warming by games of activity. They were frequently taken outdoors for these. They grew roses in their cheeks while pupils in "perfectly ventilated" rooms grew sallow and listless.

I have the written requests that

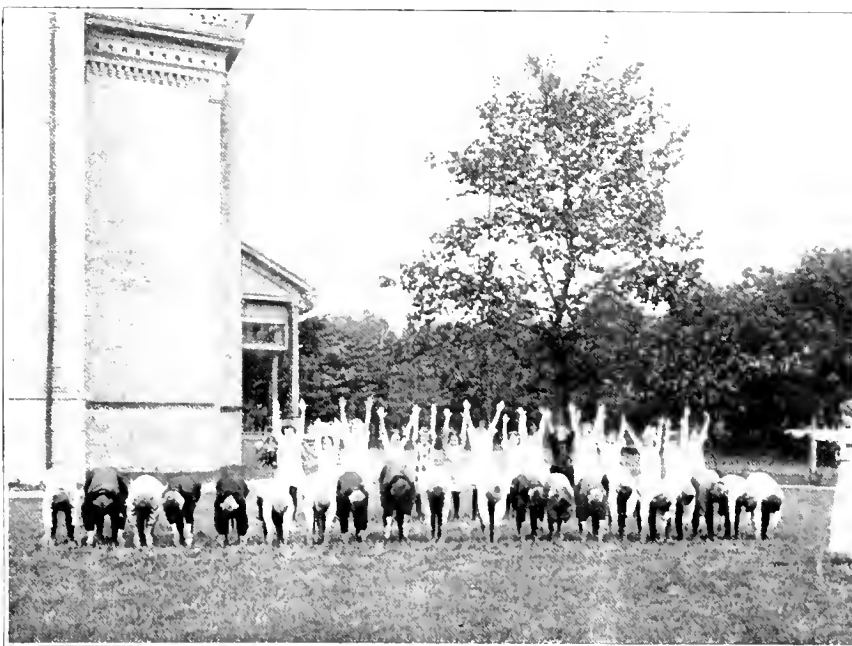
came to my desk like snowflakes asking that more than one thousand children in various grades be given cold air. Gradually the whole school became cold-open-air, except one room in each grade. We built two canvas rooms on the roof and kept them specially cold. The lower the temperature the better they liked it and the more they thrive.

Conduct was better. After seven months our records show that no cold-air pupil had been sent by a cold-air teacher to the office for rebuke for bad conduct. But plenty of help had been given warm-air teachers in dealing with cases of discipline in warm-air rooms. Scholarship was improved.

### Big Boys and Big Dunces

Several big fellows were transferred to this school because they could not make their grades in their home localities, but wished to try real air. The case of one is typical. Every fall he had entered school and done well till the fans began to run and then his neck glands swelled and suppurated. His neck was a mass of scars. He explained that the doctor had cut off pieces with his scissors so it would look better.

The boy could not do fourth grade work in a modern high class schoolhouse. I put him at once into a fifth grade room, although he demurred because he had been made a fool of quite enough. He began in November; in December fifth grade was too easy; we promoted him to sixth—cold. He cleaned up the major part



Exhaling. Muscularity and an increase of chest expansion are promoted by these bending and stretching movements.

of that grade in a few weeks, mainly by reading it over, and went to seventh grade. He did not miss a day or a minute of school time. Other years he had missed more days than he was present after the hot air was being delivered. Many pupils made great progress. All were benefited.

### Open Air for All

Then we set about getting outdoor conditions into indoor air without the chill. It is unnecessary to have the rooms cold. We evolved the warm-open-air school. This uses the gentlest heat that will satisfy all. Any heat in excess of what is necessary for comfort is too much. The heating plant is the enemy where there are stuffy rooms. We humidify and admit live, unwarmed air in very small quantity. Rooms are inviting and invigorating, but not cold.

We burn less coal. The small cost of getting rid of the air sewage without permitting it to mingle with the air of the breathing plane is soon returned in fuel saved. All are comfortable without extra equipment. Care of the building is reduced and there is nothing to get out of order. Whole cities have adopted it and their children and teachers are made glad. Teachers are less wearied by a whole day's work in natural air than they formerly were by the first hour's efforts. In fact, many were formerly more weary on arising in the morning than they now are at the close of the day!

### The Nation's Peril

The hot bath which was such a factor in the destruction of the Roman empire was no more a national menace than the overheated air of the great majority of our school-houses in America. Read the thermometers in any school with approved ventilation or none and you will find practically all rooms overheated.

The New York State Commission on Ventilation says that temperatures between 68 and 75 degrees induce a strain which adds twenty-three pulse beats per minute, while the body averages 1.5 degrees above normal. In schools of all grades from kindergarten to college I have results of tests showing that no student can do as much accurate work in a minute or a day when the temperature is over seventy as he can do when it is under 68. The difference in efficiency is between 30 and 100 per cent when the air admitted is rightly conditioned.

Since ordinary schools are produc-

ing fever daily in the bodies of pupils and compelling them to work under conditions which militate against success, it is time to insist on a healthful state of the air where children spend so many hours.

Children can be out of doors half the day and do in the other half

quite as much as they formerly did in a full day indoors. School grounds are better used. Childhood is getting a better chance at life. Not only are the little folks doing their educational work with greater ease and more enjoyment, but they stand a much better chance to grow up.

## Cornell Opens Pay Clinic

SO MUCH has been written arguing for health supervision, for the periodic physical examination, and on the symptomatic picture which marks the curable stage of disease, at which time the family physician should be consulted, that, naturally, questions have arisen as to what percentage of the people do have medical service, for what conditions physicians are ordinarily consulted, and which groups, if any, suffer from neglect.

Naturally, the public and private welfare activities which have multiplied so rapidly throughout the country have had as their object, service to the socially unfortunate. There has been no dearth of agencies, and, for the most part the best of medical skill has been available in the free clinics.

But the feeling of pride of achievement in the phenomenal growth that has marked child caring stations, school clinics, free dispensaries, and health centers must be modified by the fact that anything approaching what may be considered as adequate medical service reaches only the two economic extremes, the very rich who can command the best, and the hopelessly, helplessly poor to whom help

must be extended. Proof came in from many quarters that the present day methods of group physicians involve costs which are prohibitive to



Keystone View Co.

Charles F. Neergaard, director of the clinic.

the great masses of the people. Classified according to income in studies of disease prevalence, it was found that many family budgets in many cases afford no margin for medical care. Studies in infant mortality indicate that the mortality rate among the babies of unskilled work-



Keystone View Co.

Patients enrolling at the newly opened Cornell University Medical College Clinic. Here at the desk they cite their history, pay their fee, and are sent to the department for which their case calls.



ers is almost exactly double that among the skilled.

On the basis of these studies the fact must be accepted that relative poverty has prevented great masses of the people from employing skilled aid when in need of medical care. When facilities are lacking or not available to the masses, a lapse in preventive measures or failure to take "a stitch in time" cannot be charged to indifference of the people or even to lack of information. The stoical patience of the masses against the ills that could at least be lessened is one of the most pathetic spectacles of human life.

### A Far Seeing Enterprise

Cornell University has risen to meet this need in establishing a "Dollar Clinic," designed for those who cannot pay the office fees of specialists and yet do not wish to go to a charity clinic, was opened recently at First Avenue and Twenty-eighth Street with a rush of applicants for treatment and diagnosis. More than 250 persons were treated the first week and appointments for 750 more were made for the second week.

Charles F. Neergaard, Director of the clinic, has said that the public's response to the opening of the first "pay clinic" in this city for general medical service has been so great that it was probable that the hours will be extended to include the entire morning and up to 7:30 every evening. In the meantime, no one will be turned away. Whenever the rush is so great that all the applicants on any day cannot be treated, appointments will be made for those who failed to get consultations.

Before the clinic doors were opened on the first day, applications had been received from 350 persons wishing treatment. Appointments for these persons were made over a week's period. The policy of the clinic is to make appointments for half the number of cases which the staff could treat, leaving half of every day's clinic hours free for those who applied for medical services without previous appointment.

In line with its announced policy of "privacy, individual care and unhurried and courteous service," those in charge of the clinic had arranged the entrance hall and the offices of the staff so far as possible like the offices of private physicians. All patients were met at the door by a "hostess." Appointment patients were taken to the registrar ten minutes before the appointment hour. Patients without appointments were



Keystone View Co.

Patients waiting in line in the prescription department of the clinic

given numbers in sequence. Appointment patients were alternated with those who had no appointments.

In the registrar's office registration and history cards were issued and the patients received admission cards. These they presented to the cashier with the fee—one dollar for ordinary examination or treatment, \$2.50 for health examinations and ten dollars for special diagnoses. The histories were filed with the librarian.

The patients, on arriving at the different clinic divisions, of which there are three general and fourteen special, were met by the clinic executives and then assigned to the physicians in private offices. After examination and treatment, the physicians, whenever necessary, wrote prescriptions, which were filled by the clinic druggist at cost. Appointments for further treatment were also made directly with the physicians.

### Many Physicians on Staff

Seventy-six physicians are on the "pay clinic" staff. They are members of the faculty of Cornell University Medical College, and they include many distinguished specialists. The staff is distributed among the different departments of the clinic as follows: Medical, twelve; surgery, seven; obstetrics, four; genito-urinary, ten; neurology, twelve; psychiatry, seven; dermatology, five; otology (ear diseases), four; laryngology (throat diseases), five; orthopedic surgery, four; eye diseases, including fitting of glasses, six.

About one-third of the cases treated at the clinic were in the general medical division. Almost a fourth went to the clinic for general health examinations. Of the special clinics,

the ear, nose and throat divisions and skin and eye divisions treated the largest numbers.

The present clinic hours are from 1:30 to 4 p. m. daily, either with or without appointment, and from 5 to 7:30 p. m. on Tuesdays and Fridays.

Dr. Walter N. Niles, dean of the medical college, has asked the cooperation of medical societies and physicians in this city.

"The medical profession," he said, "is offered the cooperation of a group of specialists, to which it may refer needy cases for general diagnosis or single examination. Cases so referred will be returned to the physician after careful study with a written report of findings and recommendations for treatment. No case referred to the clinic will be given treatment except at the direct request of the referring physician.

The desire to cooperate, not to compete, with the general practitioner is emphasized. The college looks to him in referring cases, to protect both the medical profession and the clinic against abuse.

The diagnostic clinic will be directed by the Department of Internal Medicine, which will analyze the reports of the specialists in connection with the laboratory findings and after consultation determine upon the diagnosis and proper treatment. The members of the college faculty will exercise direct supervision and control over the work in the clinics and will take an active part in the diagnostic procedure. Members of the profession who wish to accompany their patients will be welcomed at the clinic.

The Academy of Medicine and the County Medical Society have been asked to cooperate. All agencies are to unite to extend adequate attention to all applicants for service.

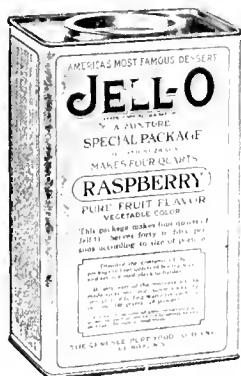


*"America's  
most  
famous  
dessert"*

**JELL-O**  
*is much  
more than  
a dainty  
dish*



The institution size package represents the same standard of quality that has made our product such a favorite for so many years.



Laborers, mechanics, factory workers and shop men need Jell-O, too.

An attractive dish should be more than just attractive. Jell-O is not alone of benefit to the housewife who would have her culinary efforts appeal to the eye and palate of the guest, or to the ill whose appetites must be coaxed back to normal. Jell-O supplies in the diet what every manual worker must have to remain efficient—tissue repairing and protecting qualities to offset the fatigue and physical wane due to the day's hard grind.

Industrial production depends upon individual effort. It cannot be speeded up while the individuals responsible for it are sagging down. The worker's diet must be related, in some measure, to the effort required of him. Jell-O retards tissue waste without in the least causing the physical depression produced by the eating of heavy foods. It is very easily digested and assimilated.

Workers eat Jell-O with great relish. Served in the industrial lunchroom or cafeteria, with fruits, pastries and in many other ways, its tasty appearance goes a long way toward making the employee's meal time a period of pleasure and satisfaction.

THE GENESEE PURE FOOD COMPANY

Le Roy, N. Y., and Bridgeburg, Ont.

# Health Stunts to Interest Everyone\*

BY LEONHARD FELIX FULD, LL.M., PH.D., NEW YORK CITY

THE sympathy which expresses itself in commiseration of the lot of men who must work overlooks the fact that ease and inactivity are not unmixed blessings, but may constitute a menace to health and well being proportionately greater than attends even strenuous living under reasonably favorable conditions. Nature very definitely demands the

This series of exercise affords a wide choice of stunts which combine features of work and play.

No. 5. *Jumping Jack*.—Are you fond of skipping rope? Are you proud of your record? How many times can you skip without missing? Are you proud of your rhythm? Proud of your balance? You have a right to be proud. Skipping rope properly

your balance. Watch your posture. Watch your rhythm. How many times without a break? Easy riding without an emergency stop. Leave your rope at home and try the Jumping Jack with your friends. Who is the best Jumping Jack?

No. 6. *Play Ball*.—Are you cross some days? Is your liver out of order? Must you rely for health and comfort on something which works while you sleep? Don't be a drag on your friends and business associates. Shiver your timbers, shake your innards, and play ball. Did you fail to bring a ball? Use your body as a ball. Sit on the ground with your feet together and your knees bent and high. Place your arms underneath your knees from the inside and clasp your hands in front of your ankles. [Fig. 7.] Start the ball rolling. Sway your body until you lie on your left thigh and your left shoulder. [Fig. 8.] The momentum will carry you on your back. [Fig. 9.] Next you will lie on your right thigh and your right shoulder. Now you are sitting again on the ground in your first position. Keep on rolling. Loosen your liver. Cheat the patent medicine man. Relieve your friends as well as yourself. Play ball. Shiver your timbers and shake your innards. Get that priceless habit of regularity. Acquire a sunny disposition even on cloudy days. Play ball. Be happy. Enjoy life.

No. 7. *Kick Up Your Heels*.—Are you a namby-pamby? Do you



Fig. 6.—This is the first position in skipping rope without a rope

Fig. 7.—This is the way to start the ball rolling. It is some stunt to keep it rolling



Fig. 8.—Second position in the game with the human ball. The momentum should carry the body back

strenuous life. Continuous development characterizes only the motor types, and only under conditions involving continuous exercise are the physiologic functions maintained in proper equilibrium. The human body is conditioned to properly proportioned effort and rest. If the day's work does not impose all round muscular effort, then the daily exercise must be depended upon to supply it.

requires much skill and experience. How about that little heart of yours? How about your spine? Do they enjoy skipping rope? What happens to them each time your feet strike the ground? Do they feel as you do when the motorman on the car applies the emergency brakes? Did you ever skip rope without a rope? Try the Jumping Jack. Raise the heels and bend the knees. Go all the way down. [Fig. 6.] Straighten the knees and rise on your toes all the way up. Down and up. Keep it up. Watch



Fig. 9.—Indulge in this exercise and cheat the medicine man

\*Part I of this series of practical exercises appeared in THE NATION'S HEALTH, September, 1921, p. 492.

# Sherman's Polyvalent Vaccines

A more adequate and rapid immunity can be established with polyvalent vaccines than from an infection itself. SHERMAN'S POLYVALENT VACCINES rapidly stimulate the metabolism and defense of the body with a resultant prompt recovery in general acute infections.

Given early, bacterial vaccines almost invariably cut short the common pyogenic infections of the skin, mucosa joints and tissues;

Administered in advanced cases, they usually ameliorate or abbreviate the course of the disease;

Even when used as a last desperate expedient, they often reverse unfavorable prognosis.

The immunizing powers of stock vaccines are demonstrated by the prophylactic efficiency of typhoid vaccine. Bacterins made from selected, vigorous organisms are far higher immuno-producers than autovaccines prepared from feeble, degenerated organisms sometimes found in the patient's own specimens. Especially in acute cases, the PROMPT injection of a stock bacterin is decidedly preferable to the DELAYED injection of an autogenous one. The place for autovaccines is in chronic infections which fail to clear up under stock bacterins due to the prob-

able presence of some unusual bacterium.

Advanced inflammatory processes due to only one class of bacteria are rare, mixed infections being the rule. Therefore, COMBINED VACCINES, containing all strains likely to be present, give the best assurances of success; an unneeded variety of the bacterin is harmless and in no way weakens therapeutic response.

Thus the favorite invaders of the nose and throat are the pneumococcus, the streptococcus, the staphylococcus and the micrococcus catarrhalis, calling for Sherman's No. 40, and in chronic cases—when there is a foul odor produced by the Friedlander bacillus—Sherman's No. 36. In visceral infections, due chiefly to the colon bacillus with the pus cocci, Sherman's No. 35 is appropriate. In Neisser infections, if these organisms are not already allied with the gonococcus, the imminence of their entrance is so great that the rational combination is Sherman's No. 49.

When, particularly in grave cases, valuable time may be lost in securing the variety of vaccine especially recommended, it is always advisable to use the vaccine at hand which contains the predominant organism of the disease to be combatted.

## Sherman's 10 Mil Container

This package has many superior features which assure asepsis, prevent leakage and facilitate the removal of contents. It is constructed on the well known Sherman principle.

The vial is amply strong which prevents breakage so frequent with shell vials.

We are exclusive and pioneer producers of Bacterial Vaccines. Originators of the aseptic bulk package. Pioneer in elucidation, experimentation and clinical demonstration.



Twenty Preparations.

Beyond the experimental stage.

**BACTERIOLOGICAL LABORATORIES OF**  
**G. H. SHERMAN, M. D.**  
 DETROIT, U. S. A.

**"DAILY USERS OF VACCINES USE SHERMAN'S"**



Fig. 10.—The somersault is a simple and easy performance that carries its own reward

Fig. 11.—Position two of "Kick Up Your Heels," which is simple enough if you are not afraid of exertion.

always keep your heels on the ground? Don't you ever dare to cross your knees? You will get your reward in another world while your friends continue to enjoy themselves in this. Namby-pambies get this reward sooner than they expect. They are generally sickly. Namby-pambies seldom amount to anything. The worth-while man or woman needs a strong mind in a strong body. Be a regular boy. Be a live girl. Kick up your heels. Put your hands on the floor and place your head on the floor between your hands. [Fig. 10.] Turn a somersault. Kick your heels over your head to the other side of your hands and lie flat on your back. [Fig. 11.] Rise to a sitting position. Grasp your ankles and stand up. [Fig. 12.] Keep your head when everything is upside down. Shake your innards and get that priceless habit of regularity free of charge. Be a complete master of yourself at all times and you will soon control others. Don't be a namby-pamby with your heels on the ground. Be a regular fellow and kick up your heels.

No. 8. *The Crane Walk.*—Have you been practising the yellow dog? Can you do the dog trot? [Fig. 13.] Have you noticed how this trot is developing your pipstern arms? How your rhythmic deep breathing is filling out the hollows of your chest? It is fun, too, is it not? Who can dog trot fastest? Who farthest? Who

most like a dog? Do you dog trot from your bedroom to your bathroom every morning? If you can dog trot with facility begin to crane walk. You know the crane—that long-legged,



Fig. 14.—Bend forward at hips till hands touch the floor to develop muscles you are neglecting.

stiff-kneed, haughty creature? With knees stiff and unbent, bend forward at the hips until the hands touch the floor. [Fig. 14.] Walk in this position. You will quickly dissolve any surplus fat on your abdomen. You will rapidly acquire that priceless habit of regularity. You will develop parts of your legs which you have neglected before. Don't be satisfied with envying a shapely body. Crane

walk and acquire one. Nervous and physiological equilibrium is an achievement, not a gift. Not alone should the hours of leisure be spent in pursuits which call forth different thoughts and feelings from those suggested by our daily work, but supplementary exercise should be constructive and corrective.

### Comparison of Intelligence Tests

Comparison recently was made by Luella W. Pressey in the *Journal of Applied Psychology* between "A" country and city children and "B" children from different economic levels, by means of a group scale of intelligence applicable to the first three grades. It was found that 22 per cent of the country children six to eight years old score above the median for their age made by city children. Children of profession and business men rate distinctly above the children of laboring men and mechanics. Similar results were found in surveys by means of scales applicable to the older children. It is, therefore, argued that the differences previously found were differences in innate ability, not in schooling or home culture, and that there was some general factor, presumably general mental endowment, independent of the particular tests used, with respect to which these groups differed.



Fig. 12.—Stand up, still grasping the ankles, everything upside down.

Keep your head with

Fig. 13.—This will serve to develop the arms and promote rhythmic deep breathing



## How the Right Shoes Increased Her Sales

*A true story with a lesson for all men and women*

"MISS GREEN, you and eight other girls out of seven hundred have shown increased sales during the last three months. All the others show losses. Why have you been able to increase your sales?"

"Who are the eight girls?" asked the young woman.

The president of the store read the names. The girl seemed happy to answer.

"Shoes. Cantilever Shoes. I got them first. Later I took each of those girls, in turn, to the Cantilever Shop. In Cantilevers, you see, our minds are off our feet. The business gets all our attention. We don't feel cross, cranky or tired. I suppose that's why our sales are good."

That afternoon the president of the big store walked into the Cantilever Shop and asked a salesman to explain the features of Cantilever Shoes.

The Cantilever salesman took a shoe and bent the sole at the shank, showing how the shoe

conforms to the human foot, even to having a flexible arch like the foot. He said, "The arch of the foot should flex with every step, according to nature, yet ordinary shoes are made rigid by a concealed metal shank-piece that forbids free movement of the muscles. There is no rigid shank in Cantilevers. The 'waist' is designed to hug the instep, the shoe fits and supports the arch restfully. The flexibility allows the arch muscles free play and this, together with the natural lines of the shoe, permits perfect circulation.

"It is important to allow the foot muscles to exercise, to keep well and strong. The forepart of a Cantilever Shoe is shaped to look well, while allowing the toes to lie in their normal position. Cantilever heels are moderately high—high enough to be smart, without throwing the posture of the body out of balance as exaggerated heels do, causing unnatural pressure and strain on the nerves and the internal organs. By wearing Cantilever Shoes a woman avoids headaches and backaches, irritability and nervousness. She is brighter and happier."

"The subject is of great importance to the business woman who is required to stand during the greater part of the working period. The tired feeling often complained of at the end of the day's work may be attributed to ill-fitting shoes."

Dr. Wilmer Krusen, head of the Department of Public Health of Philadelphia.

"Pain is a great foe to good looks. Comfort works just the other way. If you are comfortable, you are apt to be pleasant, and pleasantness and prettiness are often synonymous terms. Eliminate as many of your worries as you conveniently can, and your right shoes."

—Grace Margaret Gould on "Good Looks" in Woman's Home Companion.

"Working women are the worst offenders. It is the girls who are on their feet most who persist in wearing the highest heels. Sensible women have learned that they can increase their efficiency and even earn bigger salaries by wearing shoes built for solid comfort and health."

—Dr. Evangeline W. Young, of Boston.

If no dealer listed at the right is near you, the Manufacturers, MORSE & BURT CO., No. 1 Carlton Avenue, Brooklyn, N. Y., will mail you the Cantilever Shoe booklet and the address of a nearby dealer.

# Cantilever Shoe

comfortable-goodlooking



### Cantilever Stores

Akron—H. Orpheum Arcade  
Albany—Reidheim's, 1302 11th Ave.  
Atlanta—Carlton Shoe & Clo. Co.  
Austin—Carl B. Mueller  
Baltimore—325 No. Charles St.  
Battle Creek—Bushman's Bootery  
Bay City—D. Randall Co.  
Birmingham—219 North 19th St.  
Boston—Jordan Marsh Co.  
Brooklyn—414 Fulton St.  
Buffalo—639 Main St.  
Butte—Hulert Shoe Co.  
Charleston—J. F. Condon & Sons  
Charlotte—221 Piedmont Bldg.  
Chicago—30 E. Randolph St., Room 502  
Cincinnati—The McAlpin Co.  
Cleveland—Granger Bros., 1274 Euclid Ave.  
Colorado Springs—M. B. Rich Shoe Co.  
Columbia, S. C.—Watson Shoe Co.  
Columbus, Miss.—Simon Loeb's  
Dallas—Leon Kahn Shoe Co.  
Dayton—R. M. Neustadt & Sons  
Dayton—The Rike-Runner Co.  
Denver—A. T. Lewis & Son  
Des Moines—W. L. White Shoe Co.  
Detroit—T. J. Jackson, 41 E. Adams Ave.  
Elizabeth—Giel's, 1033 Elizabeth Ave.  
El Paso—Popular Dry Goods Co.  
Erie—Weschler Co., 910 State St.  
Evansville—North Shore Bootery  
Fall River—D. F. Sullivan  
Fitchburg—Wm. C. Goodman  
Fort Dodge—Schull & Habenicht  
Galveston—Fellman's  
Grand Rapids—Hempelshemer Co.  
Greenville, S. C.—Pollocks  
Harrisburg—Orner's, 24 No. 3d St.  
Hartford—86 Pratt St.  
Houston—Clayton's, 503 Main St.  
Huntington, W. Va.—McMahon-Diehl Co.  
Indianapolis—L. S. Ayres & Co.  
Jackson, Mich.—Palmer Co.  
Jacksonville—Golden's Bootery  
Jersey City—Bennett's, 411 Central Ave.  
Johnstown, Pa.—Zang's  
Kansas City, Kan.—Nelson Shoe Co.  
Kansas City, Mo.—300 Altman Bldg.  
Knoxville—Spence Shoe Co.  
Lancaster—Frey's, 3 E. King St.  
Lansing—P. N. Arbaugh Co.  
Lincoln—Mayer Bros. Co.  
Little Rock—Fox Shoe Co., 392 Main St.  
Los Angeles—505 New Pantages Bldg.  
Louisville—Boston Shoe Co.  
Lowell—The Bon Marche  
McKeesport—Wm. F. Sullivan  
Milwaukee—Brouwer Shoe Co.  
Minneapolis—21 Eighth St., South  
Mobile—Level Best Shoe Store  
Montgomery—Campbell Shoe Co.  
Morristown—W. Melick  
Muncie—Miller's, 311 S. Walnut St.  
Newark—897 Broad St. (Opp City Hall)  
New Britain—Sloan Bros.  
New Haven—153 Court St. (2d floor)  
New York—22 West 39th St.  
Norfolk—Ames & Co.  
Oklahoma City—The Boot Shop  
Omaha—1708 Howard St.  
Passaic—Knoll's, 37 Lexington Ave.  
Pawtucket—Evans & Young  
Philadelphia—1300 Walnut St.  
Pittsburgh—The Rosebaum Co.  
Pittsfield—Fahy's, 124 North St.  
Portland, Me.—Palmer Shoe Co.  
Portland, Ore.—375 Alder St.  
Providence—The Boston Store  
Reading—S. S. Schwerner  
Richmond, Va.—Seymour Cycle  
Rochester—148 East Ave.  
Rockford—D. J. Stegar & Co.  
Saginaw—Goeschel-Brater Co.  
St. Louis—316 Arcade Bldg. (Opp P.O.)  
Salt Lake City—Walker Bros. Co.  
San Antonio—Guarantee Shoe Co.  
San Diego—The Marston Co.  
San Francisco—Phelan Bldg. (Arcade)  
Santa Barbara—Smith's Bootery  
Savannah—Glote Shoe Co.  
Schenectady—Fulton & Hall  
Seattle—Baxter & Baxter  
Shreveport—Phelps Shoe Co.  
Sioux City—The Pelletier Co.  
South Bend—Ellsworth Store  
Spokane—The Crescent  
Springfield, Ill.—A. W. Klueh  
Springfield, Mass.—Forbes & Wallace  
Stamford—L. Speike & Son  
Tacoma—Fidelity Building (8th floor)  
Terre Haute—Otto C. Hornung  
Toledo—LaSalle & Koch Co.  
Trenton—H. M. Voorhees & Bro.  
Troy—W. H. Frear & Co.  
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Vancouver—Hudson's Bay Co.  
Waco—Davis-Smith Bootery  
Walla Walla—Gardner & Co.  
Washington—1319 F Street  
Waterbury—Rand & Hughes Co.  
Wheeling—Geo. B. Taylor Co.  
Wichita—Rorabaugh's  
Wilkes-Barre—M. F. Murray  
Winston-Salem—Clark-Westbrook Co.  
Worcester—J. C. MacInnes Co.  
Yakima—Kohls Shoe Co.  
York—The Bon Ton  
Youngstown—B. McManis Co.

## A Shipyard Cafeteria

**G**OOD food, cleanliness and quick service is the guiding principle of the cafeteria for employees at Morse Dry Dock & Repair Company, Brooklyn, N. Y., a ship repair yard with four thousand workmen.

An inferior grade of meat or produce will positively not be accepted by the manager, regardless of the difference in price, and it is clearly apparent by the attitude of the patrons as well as their direct expressions of appreciation that they recognize the care in selection. A first-class chef

ing at all. The prices are low, making possible a light lunch for a quarter or less and a big meal for half a dollar.

While the cafeteria is conducted as a private enterprise under the direction of two women employed in other departments of the Morse Company, it is not designed as a money-making proposition, their desire being service and making both ends meet with a slight margin of profit if possible.

This enterprise fulfills a distinct need, for while many men, now as before its establishment, bring their own lunches or patronize the restaurants of the type to be found in an industrial section, many prefer a dining room distinctly for Morse men where they can be sure of good food, well cooked and at a moderate price. This need has been excellently provided for by the yard cafeteria.

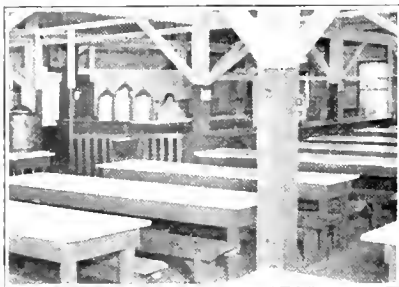
In connection with the cafeteria proper is a separate room where men who so desire are waited upon at tables seating four to six men. Here, of course, the service is not so quick and it is patronized more by foremen and office workers. However, the food is just the same and all are welcome here as in the main cafeteria.

Menus consist of soup, a plate of hot meat, potatoes and vegetables, tea, coffee, and milk, home made pies, puddings and ice cream. During the summer, salads and various kinds of sandwiches are popular for a light noon lunch.

All in all, it is believed that the cafeteria service for the Morse workmen is effective and appreciated by those it serves, and adds to the morale of the employees.

Investigations that have been made in working class homes have shown very definite relationship between the amount and kind of food and the work done. In practically every case the consumption of proteids has been proportionately high. Some nutritionists hold that this is necessary. On the whole, where food consumption has been studied in relation to occupation the consumption of proteids has been singularly low, and it is to be regarded as significant that it is highest in the heaviest trades and in the highest paid occupations, which may or may not be an unconscious effort on the part of the workman to adapt his diet to his particular requirements.

From the viewpoint of scientific needs the general conclusion of practically all these studies has been that the food of the workman generally is not well chosen for physiological purposes. Certainly more precise studies as to the energy expenditures in different trades make possible the improvement in food hygiene so as to provide workmen with a ration calculated to enable him to do his work and still maintain the necessary reserves. These principles can well be applied in the company lunch room and will be appreciated by the men. In practice it is found to be true economy as well as true humanitarianism to look closely into the welfare of the workman in this regard.



Light and cleanliness mark the dining room appointments of the Morse Dry Dock & Repair Company, Brooklyn, N. Y. Men who bring their own lunches eat here, supplementing the box lunch with a cup of coffee and perhaps a bowl of soup.

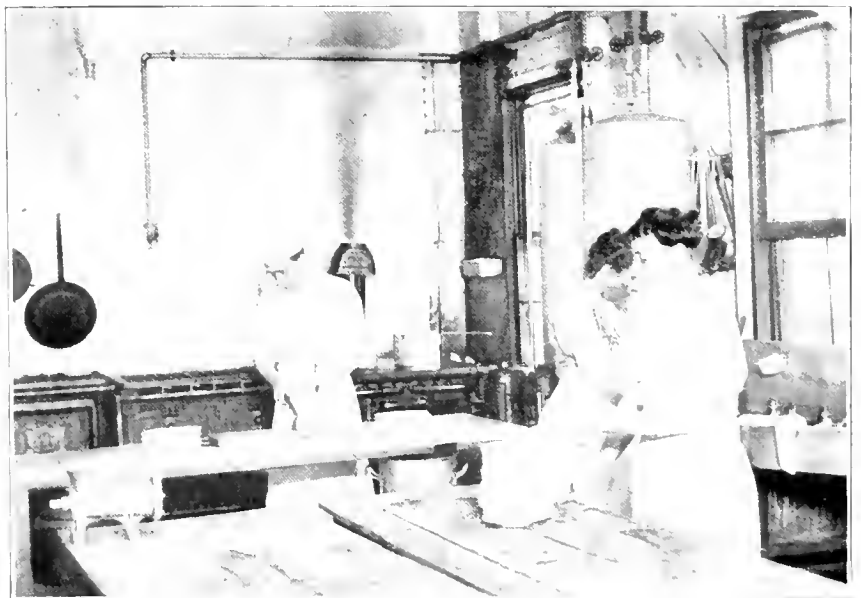
further assures that the food is properly cooked.

### Quarters Are Attractive

The air of cleanliness is distinctly noticeable in every department of the service. Though the workmen and their clothes are usually far from clean, due to the nature of their work, the room which they enter for their noon lunch is spotless from the clean whitewashed walls to the glistening white oilcloth-topped tables. The kitchen, dishes and serving likewise counterpart that of a well kept home.

All this would be of little effect, however, were it not for the facilities for quick service, for this type of workmen is without doubt impatient of delay at this time. Two runways are provided with two waitresses at each to keep a supply of full plates ready for the men in passing. A checker at the outlet of the two runways places on each tray a check punched for the proper price. Actual practice shows that 250 men can be easily and effectively cared for in twenty minutes.

The spirit of the establishment is service, urging the men in the yard who bring their own lunches to feel free to eat them in this dining room, buying simply coffee, desert, or nothing



The cafeteria is conducted as a private enterprise, under the direction of two women employed in other departments of the Company. However, service is emphasized rather than excessive profits, and the foods are closely adapted to the workers' tastes and needs.





## Metatarsalgia and Callouses Caused by Weakened Transverse Arch

This condition is recognized by depression of the Transverse Arch anteriorly or at the base of the Metatarsal bones. The dome-like arching is obliterated and painful callosities or corns form over the depressed Metatarsal heads. The foot broadens, the toes become dorsal flexed. Bunions appear at the First and Fifth Metatarso-Phalangeal articulations. Digital nerves become impinged and severe cramp-like pains are experienced through the toes. This is described by Whitman as Morton's Toe.

These conditions, Doctor, are quickly relieved and permanently corrected by the use of

### *Dr Scholl's* *Corrective Foot Appliances*

These appliances are especially designed and constructed to restore the Anterior Arch, remove abnormal pressure and permit full freedom of motion to the entire foot. Different types to meet all emergencies.

Sold and fitted by leading shoe dealers in

every community who have been instructed in Anatomy of the foot and how to properly apply correctives to the foot and shoe.

Important pamphlet, "*Foot Weakness and Correction for the Physician*," mailed upon request.

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# Dependence and Disease

BY S. P. MOORE, CHICAGO

THE medical sciences have advanced prodigiously in recent years by means of highly perfected instruments of precision which have extended the bounds of observation and enabled a wider comparison of disease conditions. Elaboration of method along with refinement of technique has tended virtually to reduce diagnosis to the mathematical demonstrations of the physical laboratory.

Some reaction has come, however, from the increasing absorption of the pathological laboratory with the end results of disease, while cure, if it is to affect either mortality rates or disease incidence, must come from recognition and interference in early stages before the disorder has made serious inroads upon the organism. At least one school of medical thought, headed by Mackenzie, has elected to study the incipency of disease rather than its remote effects and so to correlate the clinical signs as to detect and prevent disease rather than by research to illuminate only its final chapters. Along with this is the tendency to take into account both individual and racial resistance.

Authorities differ even in the definitions of disease, what it is held to be depending largely upon the point of view. J. Arthur Thomson, declares in "The System of Animate Nature" that disease in nature is a contradiction in terms; that, apart from parasites and senescence, there is almost no disease in wild nature; should a pathological variation arise, it is eliminated before it takes grip. Thomson goes on to define disease as "the occurrence of a metabolism out of place, out of time, out of tune, and says that Nature makes short work of such idiosyncrasies. He discusses interestingly the relations of commensalism and symbiosis which, when not kept within limits, lead to a parasitism destructive of the host; but even this he regards as a sifting out which ultimately makes for racial health.

## Background of Disease

Many medical men are laying increasing emphasis upon the need for the social and even hereditary background in the diagnosis and treatment of disease. It is well understood that races at the summit of their vitality can resist and fully survive epidemic attacks of protoplasmic disease which would hurry a declining stock to its extinction, as is too well

exemplified in the declining races of the South Seas. There is also to be considered the dire consequence of the introduction of the parasite into a new area, where it finds new hosts abnormally susceptible to it. The fatality of a new microbe introduced into a new population is familiar, as in the case of the Black Death in England.

The effect of the parasite on the host is extraordinarily varied, some giving off toxic substances; others causing lesions and inflammations; some promoting growths, while some do very little harm. The biologic chemist needs often to be called upon to trace these effects, but this pathology is only one phase of the subject. Biology, too, has contributed to the understanding of disease. The organs which are the latest product of evolution are usually the most prone to disorders of function, and the three levels in the evolution of the nervous system underly the grouping of certain disorders. It is rather a newer idea to search geologic records for evidences of typical degenerations of anatomy and function.

Several paleontologists have contributed to the subject of disease in their studies of the universality of parasitism, and the inference that pathologic parasitism has continued for vast ages. The most recent contribution to this subject is the book on "Organic Dependence and Disease," by John M. Clarke, New York State Paleontologist. He makes a study of the metazoan parasite and attempts in the clear evidences in geologic records to find the inception of abnormal physiology in nature. Pathologic conditions, or disease, he holds to be as much a product of evolution as the human hand or the bird's wing. Clarke calls whole races diseased if they have departed from what was for them normal living, and finds in geologic specimens of early, undifferentiated types the clues to the beginnings of disease.

Disease he defines as any departure from normal living. Normal living, biologically, is progressive living, mobile living, independent living. Dependent life, therefore, becomes a perturbation of function. Progress has ever attached to the motor types. The knell of progress is struck for a type when it settles down to a fixed, immobile existence; while in the mobile types, very low down in the

scale there occur the beginnings of purposive activity which in their developed forms can be interpreted only in terms of psychology.

The early partnerships of organisms were of mutual helpfulness, whatever their risk to progress. Acquired habits of dependence, however, led to modifications in both parasite and host. The conclusion must be reached that microbial disease is an abnormal adjustment, satisfactory for the invading organism but obnoxious to the host. For dependent species there is no hope. "Those who have not yet fully learned their subjection to Nature's laws, are engrossed with the passing interpretations of social problems, with expediences of the statute; and the cares of the world; to these should go the assurance that in greater measure than they may have suspected the clue to human destiny lies concealed in the rocks beneath our feet." Through such prehistoric record is to be attained a better perspective of the incipency of disease. The bearing of ethnology on psychology thus finds its parallel in the illumination of the subject of disease through paleontology.

Closely related to this subject is an article in a recent issue of the *Scientific Monthly*, under the title "The Biology of Death—Natural Death Public Health, and the Population Problem," by Professor Raymond Pearl, who declares that the duration of life is an inherited character of an individual, that the breaking down of an organism preceding death is not a haphazard process, but an ordered sequence, cellular death likewise growing out of inter-cellular dependence. The problem of disease is not wholly one of infection, and the "potential immortality" of the essential and important somatic cells of the body affords possibilities of better individual and racial resistance than is generally conceded.

He makes interesting observations on the promptness with which a population tends to regulate itself back toward the normal even after the disturbing upset of a war or wholesale epidemics, and calls attention to the fallacious reasoning of propagandists who claim undue credit for reduction in certain mortality rates inasmuch as the death rates from non-controlled causes of death have shown the same steady decline during the past nineteen years as has marked the controllable causes of death.

Well conceived and careful studies are called for in the elucidation of the most promising fields of public health activity, and he regards studies of

## The value of yeast in the treatment of acne

"THE causes of acne are always found in a lowered vitality, very commonly associated with constipation and metabolic disorders," writes a physician connected with several large New York hospitals. According to statistics of this same physician constipation is present in about 45 per cent of acne cases, according to another physician in about 35 per cent.

A number of well-known physicians and physiological chemists have given bakers' yeast a careful test as a therapeutic agent. (See *Journal of the A. M. A.*, Vol. LXIX, No. 15.) In 25 cases of the acnes (17 acne vulgaris and 8 acne rosacea) yeast proved to have properties of great value in remedying the basic causes of this complaint.

Every case showed improvement or cure. The acne vulgaris cases required from one week to two months, the acne rosacea from a few days to four weeks. Typical of the acne vulgaris was the case of a young man who had a moderate eruption on face and body during three years. Three cakes of yeast daily before meals for five weeks was the treatment prescribed. The eruption cleared almost completely in four weeks.

The laxative action of yeast was proved both in correcting constipation itself and as a result of feeding experiments on normal persons. In regard to these acne cases Dr. Hawk states: "Whether the success of yeast in acne vulgaris and acne rosacea is due alone to its laxative action or to some fixed effect on the intestinal tract we are unable to say. The preparation was laxative in all these cases."

Nutrition experiments carried on at Jefferson Medical College both with rats and with men demonstrated the value of yeast in stimulating metabolism. Thus both clinical observation and laboratory research have clearly indicated that yeast helps correct the basic causes of acne.

In the tests referred to Fleischmann's Yeast was used, as that is the best known and most widely used of ordinary bakers' yeast.

Fleischmann's Compressed Yeast may be secured fresh, daily, from grocers. If the physician prefers he may write to The Fleischmann Company in the nearest large city and it will be mailed direct on the days wanted.

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occupational mortality as especially likely to yield large returns. The highest credit for improvement in health conditions is due to the health activities dealing, of necessity, only with environmental matters. "Of all activities looking towards the modification of the environment to the benefit of mankind, that group comprised under the terms sanitation, hygiene, and public health have by all odds the best case. . . . When based upon a sound basis of ascertained fact it may, and does, proceed with a step as firm and inexorable as that of Fate itself, to the wiping out of preventable mortality. . . . Some of the work, however, has no such foundation, but is built upon the exceedingly shifty sands of ignorance."

. . . We shall save a good deal of money and human energy, if we first take the trouble to prove that what we are undertaking to do is in any degree likely to achieve any useful end."

Yale University Press, 1921.

### Relation of Medicine to Industry

A meeting was held in the offices of the Industrial Welfare Society in London, June 2, at the same time that a series of conferences were being held at the Guild Hall under arrangements made by the Royal Institute of Public Health, the subject under discussion being industrial medicine. The Duke of York in opening the proceedings used the following words: "Industry has been too long carried on without thought of its effect on the worker."

The conference was of a strictly practical character, being concerned with what should be done to maintain and improve the health of the workers, and what steps ought to be taken to make the resulting advantages of healthy labor quite clear to the minds of the employers. It is evident from the discussion and reports that there is a great need of arrangement and coordination, of the establishment of new activities, and the planning of programs without interference from the old established customs or interests. The problem of prevention through timely examination, the establishment of dental clinics, the provision of trusses, the shortening of disablement period after accidents by electrotherapy and massage, clinics at the workplaces, provision of half-time or light work for convalescents, removal of men from dangerous work at an age when slight accidents might make them permanent cripples, are

examples of the care of the individual worker already in evidence.

Much remains to be done toward making unhealthy processes healthy and removing the causes of long-standing ills. Industrial phthisis presents huge difficulties.

The presence of the doctor in the works, on the Whitley Councils, and on the Work Committee does much toward solving the problem of his own position and making him a part of the general system. Conversely, the average medical practitioner has not studied at close range the problems of the employee and employer, in spite of his real desire to aid and abet sound therapeutics. Any attempt to upset the management of industrial concerns by ill-considered, bad features, founded on inadequate knowledge brings the entire movement into discredit. Whatever the exact method adopted, the works doctor must be in close touch with the general practitioner as well as with certifying factory surgeons.

Industrial medicine must not be under "close" specialism and if the general practitioner is to acquire a preventive outlook he must have the opportunity to study the effect on his patient of both the home and occupational conditions. Home conditions

must be right and, manifestly, and men fitted to their jobs. Intelligent medical supervision takes account of both conditions. Once inaugurated on safe and sound lines, industrial medicine is likely to go ahead faster than some may think, according to the review in *The Lancet* of June 11, 1921.

### Cares for Children in Cotton Mill Districts

That North Carolina is prosecuting still further her survey into the sociological aspects affecting the health and welfare of her people is evidenced by the welfare work in cotton mill communities, as reported in the April, 1921, issue of the *Southern Textile Bulletin*. Recreational needs are being taken care of at Draper, a typical community, by the Welfare Department of the Carolina Cotton and Woolen Mills Company and the Y. M. C. A. A large and well equipped playground has been opened for the children. A class of sixty men and boys, ranging in age from fourteen to sixty years old, was recently graduated from the vocational training night classes of the mill communities of Leaksville, Spray, and Draper.

## Plan to Combat Tuberculosis

THE report of the Committee on Tuberculosis to the Supreme Council of Knights of Columbus was an effective document as an offensive agent against the disease and resulted in that Organization committing itself to a continuous campaign involving:

(1) A general educational campaign among the members of the Organization as to the cause and prevention of tuberculosis. The object of this campaign is to convince the various councils of the Order that they should take up tuberculosis work and do all that is possible to prevent tuberculosis among the families of their members; to discover and care for existing cases. Schools are to be interested in the Modern Health Crusade as a system of health education suitable for children of school age, its purpose being to form good health habits, to promote community service, and to arouse a sense of responsibility for the control of preventable disease.

(2) The care of children is to be emphasized, inasmuch as it is now generally recognized that the period of infection from tuberculosis is

chiefly in the childhood years. School nurses are to be employed and children's clinics established. By these means incipient or suspected cases of tuberculosis are discovered early and provided for either in open air schools, summer camps, and, when necessary, by care in sanatoriums or children's institutions.

(3) Local dispensaries and clinics are to be provided for the care of adults. These will provide opportunity for complete physical examinations as the best possible health safeguard.

(4) After-care is to safeguard the patients pronounced as arrested or quiescent. Convalescent provision, vocational counsel, and visiting nursing service will constitute the machinery of this important phase of the work.

The Committee responsible for the comprehensive study of the situation and for its able statement in the report quoted are: Jame L. O'Toole, Pennsylvania, chairman; Drs. E. W. Buckley, John F. O'Briend (Massachusetts), Stephen J. Maher (Connecticut), and Mr. Thomas A. Lawler (Michigan).

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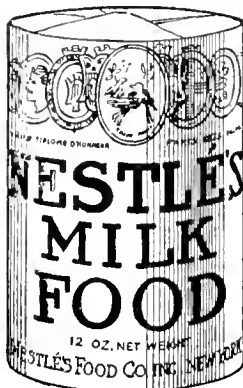
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# Health of Detroit School Children

SCHOOL medical inspection is intended to remove the tragedy of unnecessary handicaps induced by preventable disease in early childhood. Prominent among the crippling conditions of early development is undernourishment, its most serious aspect being that it is attended by a corresponding lowering of the vitality which renders the child an easy victim of disease. Amar warns that inanition is particularly to be avoided in children, their development suffering from it. Even if followed by abundant nourishment, the normal development of the muscles is affected.

During the past year the Board of Health of Detroit has sought to determine the number of malnourished children in the public schools. From analysis of 58,581 records, it was found that 11,368 were ten per cent or more under weight, and of these 3,943 were 15 per cent or more under weight. The school attended by white—Canadian, English, and Scotch ancestry—were found to show the greatest percentage of children under weight; while the schools attended chiefly by children of Russian, German, and Polish ancestry were found to have the smallest percentage under weight. The comment of Dr. L. O. Geib, supervisor of Medical Inspection, in this connection of the advantage of the children of foreign extraction in receiving principally the more common foods, high in caloric value, instead of the sweets and pastries so popular with the average American child, is significant.

A résumé of the work of the findings of the investigating committees in Detroit is fully set forth in the August-September issue of *City Health*. Their preliminary study of standards of growth as applicable to Detroit Schools are as follows:

(1) Weight and height bear a very definite relationship to school progress.

(a) Retarded children are generally shorter and lighter than children in grade at age.

(b) Accelerated children are generally taller and heavier than children in grade at age.

(2) Nationality must be considered as an important factor in any final growth table.

(3) Boys grow faster than girls up to 10½ years.

(4) Girls grow faster than boys

from 10½ years to approximately 15 years.

(5) An intensive study of individual types of relation to ratios should be made to determine the exact value of the ratio table.

(6) Height and weight measurements can be made accurately by teachers for practical purposes.

(7) Children should be measured at least three times each year: (1) at the beginning of the first semester; (2) at the end of the first semester, and (3) at the end of the second semester.

(8) A study of height and weight of all children in Detroit Public Schools should be made in 1921-22 to develop a complete growth table for Detroit.

(9) The history of the child regarding illness and physical defects must be given careful consideration

in relation to his height and weight.

(10) It is probable that a careful study of the height and weight of the parents might throw light upon the reason for the variations of the children.

(11) The tremendous variation within an age group suggests that height and weight are determined by a large number of factors other than age and sex so that interpretation must be based upon a series of laws rather than a single law.

(12) Study should be made at once of the physical defects of a sufficiently large number of children in each age group to determine the relationship each of these defects bear to the general health and progress of children in the public schools. The figures compiled from studies of special groups are highly important and especially are the figures from Detroit valuable, as they may be considered to represent a typical urban group.

TABLE 1—WEIGHT-HEIGHT RATIO OF DETROIT BOYS

Height in inches	5	5½	6	6½	7	7½	8	8½	9	9½	10	10½	11	11½	12	12½	13
39	91	93	92														
40	93	95	95	96	97												
41	94	95	96	96	98												
42	97	98	97	97	98		100										
43	97	98	98	99	99	99	99	102									
44	101	100	100	99	103	102	102	104									
45	105	102	102	102	101	103	103	105	106								
46		104	104	104	105	105	104	107	108	110	110						
47		106	109	106	107	107	107	108	108	111	113	116	121	126			
48			109	108	108	109	109	110	110	111	113	116	117	123	121		
49				110	112	110	112	112	114	113	114	115	117	123	126	129	139
50				112	113	116	114	115	117	116	117	119	119	122	130	126	136
51					112	117	117	120	122	123	122	123	126	125	128	128	132
52						116	120	122	123	123	126	128	129	128	131	133	
53							124	124	125	125	126	126	128	129	132	134	133
54								127	128	130	129	130	131	132	134	133	
55								131	128	130	135	133	134	136	136	137	135
56									135	138	135	137	138	138	140	141	
57											132	139	140	141	144	143	144
58											141	139	142	144	144	146	149
59											139	142	150	151	148	153	153
60													155	156	154	152	155
61														157	162	161	158
62															166	164	168
63																169	174
64																	169
65																	173

The normal weight-height ratio for a boy is found opposite his height and under his age. Example: The normal health ratio for a boy 50 inches tall and eight years old is 114. All groups with less than 15 cases were disregarded in preparing these tables.

TABLE 11—WEIGHT-HEIGHT RATIO OF DETROIT GIRLS

Height in inches	5	5½	6	6½	7	7½	8	8½	9	9½	10	10½	11	11½	12	12½	13
39	89	92	94	95													
40	92	93	93	94	103												
41	92	94	94	94	94												
42	95	96	95	95	95	98											
43	96	97	96	96	97	97	97	99									
44	98	98	100	98	98	99	101	101	99								
45	104	101	100	102	100	100	101	102	103	109							
46		104	103	102	102	103	105	102	105	107	106	112					
47		104	104	106	104	105	105	105	107	106	111	108					
48			106	105	107	107	107	108	107	109	110	114	110	122			
49				111	110	110	111	110	114	111	114	116	119	124	124		
50					105	113	113	114	114	115	116	117	125	118			
51					115	118	118	119	119	117	119	118	119	124	126	131	144
52						119	120	120	123	122	123	121	123	122	125	127	134
53							131	126	126	124	127	128	127	129	131	127	
54								124	126	127	128	131	130	131	129	131	134
55								133	127	131	133	134	132	136	134	138	137
56										131	134	138	143	139	141	142	140
57										142	135	139	143	145	144	145	146
58											142	145	147	147	148	153	152
59											131	152	155	155	153	155	156
60												148	154	158	161	163	160
61													155	164	167	167	169
62														168	168	168	170
63															181	182	175
64																183	177
65																	174

The normal weight-height ratio for a girl is found where the horizontal column opposite her height crosses the vertical column under her age. Example: The normal health ratio for a girl 48 inches tall and seven years old is 107.



## After Sterilizing the Wound

comes the necessity for increasing the number of leucocytes and stimulating their activity. The rapidity of the healing process depends largely upon the speed of the leucocytes in building the protective granulation tissue.

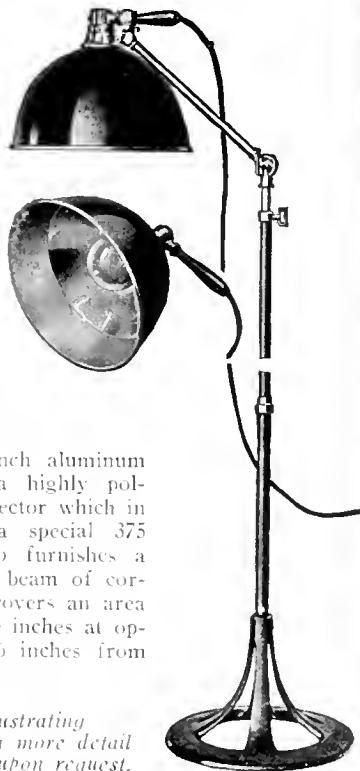
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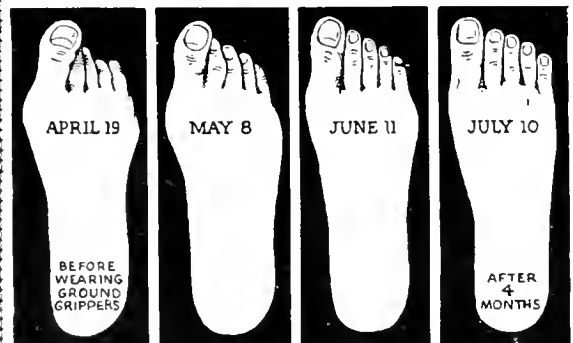
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## Health Notes Now Valued As "News"

An able medical writer in the *London Times* is writing a series of illuminative articles on problems relating to individual and public health. The degree of disease tolerated by a community, he says, represents the measure of attention centered upon health problems. Of incalculable benefit, either to individual or community, is the determination to live, the purpose which seeks rational methods of putting unfitness away and developing to the utmost physical resistance. He warns against obsession by symptoms, but declares for rigorous activity and wholesome ways of living.

Another of his significant messages is directed toward habitual drug users—not the victims of narcotic drug addiction, but that large number of men and women who take day after day salts or vegetable astringents, or metallic compounds with the mistaken notion that they stimulate the digestive tract. These irritants set up a kind of inflammation of the mucous membrane of the intestine until presently, the whole digestive tract, a delicately adjusted and automatic mechanism, refuses to be whipped any longer. Drugs should be avoided as much as possible in certain conditions, but this sort of self-medication and amateur doctoring takes no thought of the limitations of drugs or the special needs in a given condition.

A failure in function represents some failure in the art of living, declares this author, and demands that a man examine his way of life in order to discover where it falls short of efficiency. Above all, he should avoid bombarding his system with medicines; otherwise, he will find himself increasingly unresponsive to drugs, and will enter "that miserable company of people who are ever on the lookout for new medicines."

## The Factors in Proper Physical Development

The broadest need of the people, whether on peace or war time basis, is such measures as will make men physically fit to withstand active service. Fundamental to such a state of physical development must be an exact knowledge of the mechanics of the body.

The ideal posture to be developed is the natural standing position, with the head erect, chin drawn in, the chest held high, the abdomen drawn

in or held flat, and the weight borne largely upon the anterior parts of the feet, in which position all the muscles are in balance, no strain is on the ligaments, nor can the viscera sag so that their function is interfered with.

The August issue of the *Military Surgeon* carries the comment by Dr. Joel E. Goldthwait on causes and correctives of the more common disability conditions in civil as well as army life. Flat feet and lame backs are for the most part due to the habit of standing so that the muscles of the feet and trunk are out of balance. Once the posture is corrected, local strains are removed, the symptoms disappear, and the general vigor is greater.

A further advantage is that as the habit of correct standing posture is formed, the diaphragm is necessarily so held that it is able to perform its part in the respiration and circulation normally. Dr. Goldthwait makes the significant observation that the erect position in which the dia-

phragm could work normally was not in a single instance associated with disturbed heart action.

## Dental Hygiene Costs in Bridgeport

Dental hygiene work in the public schools of Bridgeport, Conn., costs forty thousand dollars a year, which is about \$1.50 per pupil. The saving in reeducation by elimination of absences formerly caused by "sick teeth" and by the improvement in general health, almost replaces this outlay. Educational and preventive work are emphasized rather than "repair work," the dental corps consisting of twenty-six hygienists and three dentists. Health has been made a requisite for promotion in the schools. It is expected this year to send practically all of the children from the fifth grade into the sixth with no cavities in the permanent teeth, and with all physical defects of the eye, ear, nose, throat, and skin either corrected or in process of correction.

# Organic Basis of the Neuroses

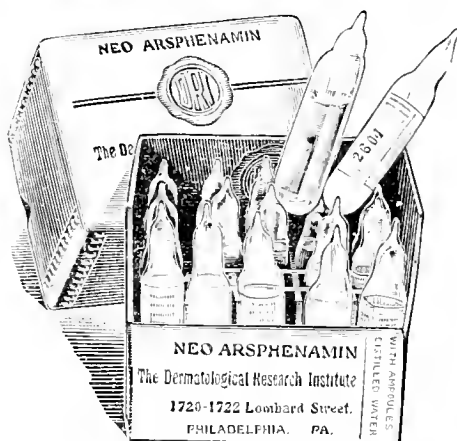
**O**BJECTIVE methods devised for the study of neuroses by Dr. F. L. Golla, physician to St. George's Hospital, London, should bring to the greatly overworked term "neurosis" a more precise definition, and to the nervous patient whose disorders have been generally ascribed to purely psychogenic origin will hereafter be extended the diagnostic resources of the physiological laboratory. In the Croonian lectures published in the recent issues of the *Lancet*, Dr. Golla approaches the subject of mental disorder from a purely physiological standpoint. He determines the feeling tone and measures bodily response to cerebral activity in terms of the galvanic reflex. As the galvanic reflex is entirely beyond the volitional control of the patient, it becomes an exact index of the degree of organic disturbance. While the psycho-analytical method has evolved much valuable information in the realm of psychology, its therapy must be considered merely as symptomatic treatment in view of the abundance of evidence adduced by Golla in proof of the existence of organic disequilibrium in the neuroses. The exact nature of the pathology involved is still in question but microchemical changes in the nerve cells with possibly defective oxidation processes is the probable

basis of nervous asthenia. Another group of these cases shows hyperexcitability of the emotions associated with a very active thyroid, an increased basal metabolism and an irritable sympathetic system. Another distinctive type of neurosis is characterized by the manifestation of primitive instincts, ill adapted to the environment, but here as in the less obscure cases there exists a demonstrable organic imbalance, causing the disturbance of the affective mechanism.

The hysterical type, as revealed by the galvanic test, is associated with subnormal activity of the affective mechanism. The whole study of the Golla marks a distinct advance toward placing mental diseases upon an organic basis. Golla proposes the precise methods of investigation and the rigidity of objective signs to offset the undue attention which is at present devoted by psychologic enthusiasts to the classification and tracing of psychogenic origin in nervous troubles. It relieves the whole subject of metaphysical implications and clears the way for a scientific understanding of mental disorders. It affords a very definite means of diagnosis in many cases indefinitely characterized as offering problems in conduct merely, or as exhibiting propensities for malingering.

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## Hospital in High School

THE schools have been earlier than health workers in taking home the lesson that we learn to do by doing. Home economics departments have employed model apartments, completely fitted up, the care of which has been assigned as a part of the routine requirements in given courses. Domestic science departments have conducted dining rooms in which actual experience in budget making, buying, handling, storing, and serving foods has been afforded to students in training. The work of these departments has contributed materially toward nutritional programs in schools, and toward dietary instruction to the pupils in general. Objective methods are the order of the day.

A recent report has it that some schools are installing student dormitories, scientifically managed under student personnel, which is a distinct advantage in affording facilities for the satisfactory housing and care of non-resident pupils.

Rochester, N. Y., has recently made the progressive announcement that a small hospital is being installed in the girl's wing of East High School. Mrs. Grace Dowdle, a graduate nurse, has been installed in charge and will attend to all cases of illness that may arise among the members of the student body during school hours. This project is being carried out by the Health Bureau, working in conjunction with the Board of Education.

Albert H. Wilcox, principal of the school, welcomed the action of the health officials in installing the nurse and approves the plan, which already has been carried out in the grade schools of the city, though under the direction of the Public Health Nursing Association.

### Occupies Small Space

The miniature hospital occupies a small space. At present there is only one cot in the room, but it is planned to increase this number to three. A screen is provided for each bed. The cots will be of the folding variety so that they can be stored away when not in use.

A supply of medicine and other necessities is kept on hand. It is not known what arrangements will be made for the caring of the students' teeth, but the medicine chest will be supplied with materials to cope with toothache. Headaches, the most common ailment, also will be treated.

Besides having her roll-top desk in which to keep her records, the nurse in charge will be provided with a large filing cabinet in which she will keep a record of all cases, with a description of the entire course of each case. Plumbers are running pipes into the room so as to make available a supply of running hot and cold water.

### May Feign Sickness

One branch of work to be carried on by Mrs. Dowdle will be that of supervising the issuing of leaves of absence on account of illness. Pupils desiring to play hockey have been known to begin suffering from a headache or a toothache. The nurse

will endeavor in every instance to arrive at all the facts in the case and, unless sufficient evidence is given that the patient is really suffering, she has been empowered to recommend that such requests for absence be refused.

### Will Give Health Talks

The nurse will give a series of health talks through the year and instruct the students in methods of administering first aid. During the winter months there is generally little to be done, with the exception of occasional cases which might result from injuries sustained in the gymnasium. In the spring and fall it is no uncommon thing for pupils of both sexes to faint. This work heretofore has rested upon Miss A. Weyman, physical director for girls, and James Fowle, physical director for boys.

## Reporting Physical Defects

OWING to the wide variations in the reported prevalence of physical defects among school children, George T. Palmer, D.P.H., epidemiologist of the Health Department of Detroit, Mich., has devised a uniform language for the use of inspectors in reporting defects. The need of this code was brought out by the fact that while 30 per cent of tonsillar defects were reported from one school, only 5 per cent were reported in a school a few blocks away. The differences were due, not to the children but to the interpretations of two medical inspectors. In an effort to secure uniformity in reporting and thus make records from different schools comparable, physical examiners now travel in teams of three men each. They come together at intervals to check it over by independently examining the same group of children. All must report defects in terms of the following graded scales:

An "X" after a numeral is the signal for the sending home of a recommendation slip to parents. The nurse follows up all "X" cases to secure corrections.

(1) *Thyroid*.—0—Normal; 1—Slightly enlarged, evident on close examination but hardly noticeable; 2X—Moderately enlarged—unmistakable enlargement and yet not markedly disfiguring; 3X—Greatly enlarged—very evident and disfiguring enlargement.

(2) *Vision*.—00—Vision corrected, wearing glasses; 0—Normal; 1—15/20 (or 20/30) but not 20/20; 2X—10/20 (or 20/40) but not 15/20 (or

20/30); 3X—Cannot read at 10/20 (or 20/40). Defects other than inability to read the chart may be noted by either 1, 2X or 3X, according to degree.

(3) *Hearing*.—0—Normal; 1—Slight impairment in hearing, 15/20 but not 20/20; 2X—Evident impairment—10/20 but not 15/20; 3X—Marked impairment—cannot hear whispered voice at ten feet (10/20). If either ear is discharging pus the letter P is added.

(4) *Mouth Breathing*.—0—Normal; 1—Slight evidence of mouth breathing (may be temporary condition due to acute cold). 2X—Unmistakable evidence of mouth breathing which removal of adenoids would undoubtedly correct; 3X—Marked evidence of mouth breathing malocclusion; noticeable disfigurement. Adenoids undoubtedly responsible.

(5) *Tonsils*.—00—Tonsils have been removed, the base of the tonsil bed is smooth, shows no tonsil, and child knows that it has been removed; 0—Normal. Tonsil even with its surrounding cushion or distinctly behind it; 1—Slightly enlarged or protruding slightly from its surrounding bed; 2X—Tonsil large enough to reach half way across to the middle line of the mouth; 3X—Tonsil touching or almost touching its fellow on the opposite side.

Serial bulletins to all examiners and all departments covering the wide range of defects encountered are expected to remove discrepancies which have appeared in the records and to place the examinations made by different men on a comparable basis.

## CASE RECORD FORMS

### *Keeping Up to Date*

**T**HE System of Hospital Case Record Forms devised by the American College of Surgeons has been in use in many hospitals for upwards of two years. From time to time new forms have been added as experience has shown the need. The College has issued a new bulletin covering these additions which has been mailed to all hospitals.

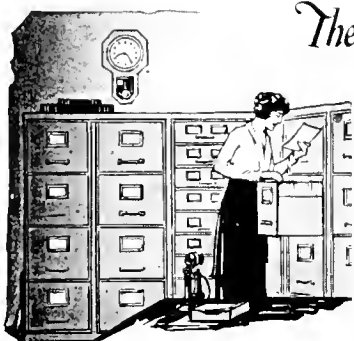
The Faithorn Company supplies these forms, well printed, on durable bond paper, at favorable rates. All new forms are added and revisions made as they are developed by the College. Rates on new forms are the same as given on other forms in our catalog.

*Please note*—We prepay all shipments, thus distance is no barrier to buying of us, and you receive the forms with no more inconvenience than if ordered locally.

### *Filing Devices*

Next in importance to the keeping of accurate case records is an adequate system of filing. We supply loose-leaf binders for temporary filing, and filing cases with indexes for permanent file.

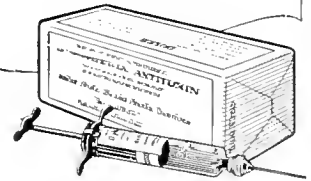
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Use a clear Antitoxin. Clarity of serum means less reaction. A cloudy product tends to aggravate the reaction from serum administration, especially in cases of older children and adults who require the larger doses.

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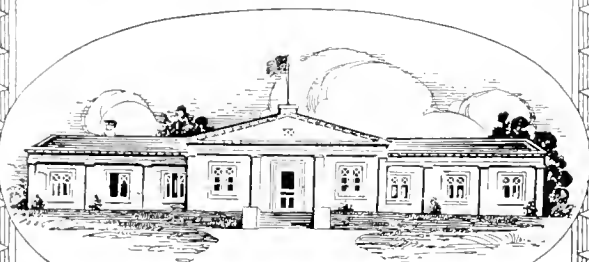
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## Population Growth and Congenital Syphilis

The toll of congenital syphilis reaped in the form of an excessive stillbirth and miscarriage incidence, high infant mortality and large proportion of permanent disabilities among surviving children is universally experienced. Dr. S. Hata of Tokio, reports in the *International Journal of Public Health* that less than 10 per cent of the fetuses of syphilitic mothers will ultimately live a natural course of healthy life, and since only 60 per cent of the infected women under his care were apparently fecund, the number of surviving healthy children would at most be 10 per cent of 60, or 6 per cent. To nations whose populations have been devastated by the World War and whose problem of repopulation is paramount, such destructive loss from congenital syphilis is a matter of grave concern.

The experience of Dr. P. C. Jeans of St. Louis would indicate that about 10 per cent of all marriages involve a syphilitic individual, and agree with Hata's findings as regards the high incidence of infection in the offspring. The problem is further aggravated by the fact that there is an amazingly large number of women with a positive Wassermann but with no clinical manifestation of syphilis. Because of this common occurrence routine Wassermann examination of all pregnant women and immediate anti-syphilitic treatment of positive cases are recommended as the ideal method for preventing congenital syphilis. Such a practice would cast no mere slur on the woman and her family than the procedure of applying silver nitrate to the eyes of all newborn babes. The discovery and treatment of syphilis in the pregnant mother signify fewer miscarriages and stillbirths, disease-free children, as well as healthful mothers.

## "Filled Milk" Bill Favorably Reported

Shortly after the reconvening of Congress passage will be sought of the Voigt Bill prohibiting the shipment of filled milk in interstate and foreign commerce, the Committee on Agriculture having favorably reported on the measure. Charging that "filled milk" is an imitation of condensed or evaporated milk, which it exactly resembles in consistency, color, and taste, and that its cheaper production tends to displace pure milk products by the compound, the

bill specifically defines filled milk to mean any milk, cream, or skimmed milk to which has been added or which has been blended or compounded with any fat or oil other than milk fat. Penalties attaching to infringement of the proposed bill are applicable to principal, agents, or employees and the measure is sufficiently drastic to limit the manufacture and shipment of such products within the confines of the state in which it is manufactured.

It is not charged that the manufacturers either manufacture the compound or sell it in place of condensed or full milk, but in the opinion of the majority report, retailers have done so and a correct label is not sufficient to protect the public and, therefore, an industry which last year found a market for 200,000,000 pounds of skim milk which formerly had no market, must be put out of business.

The minority report sets out fully that the product is "not unwhole-

some, deleterious, or injurious to health, but a wholesome and nutritious food," that it is properly, clearly, and plainly labeled in compliance with existing laws, and that it offers opportunity to thousands of American people limited in finance to purchase this food at prices within reach when there is a world demand to reduce the price of necessities. The minority report goes on to say that there is no demand for this legislation except from those selfishly interested in removing competition, and that it cannot be held to restrict the use of dairy products.

Legislation against this industry, attempted in the states of Washington, New York, New Jersey, and Pennsylvania, failed of enactment. Carried to Congress, the outlook seems to favor enactment which would prevent the utilization of the vast quantities of skim milk which until the past few years were wasted or its food value used in uneconomical and unscientific ways.

## Investigate Deficiency Disease

EXPERIMENTAL investigation of the deficiency diseases is of recent date, and no generally accepted plan of attack has been formulated. In order to obtain information as to the nature of the dietary deficiency producing a certain disease, a well defined method of procedure is necessary, such as to find a suitable experimental animal; to use a diet complete with respect to other food elements, but which produces the particular disease with regularity in the chosen animal; to find a food that prevents the disease when added to a given dietary proved inadequate and to find the minimum amount of this food necessary to confer protection. A further development would be to prepare extracts of this food that also confer protection. These rules seem quite simple, but many false conclusions have been drawn from experiments that ignored them. In the investigations conducted by Lieut. Col. Edward B. Wedder, Medical Corps, United States Army, reported in *The Military Surgeon*, August, 1921, the purpose was to learn as much as possible concerning the chemical constitution of the antiscorbutic substance. Only young healthy guinea pigs were used. On a suitable diet these animals developed scurvy with great regularity on about the fifteenth day, after which they lost weight rapidly and usually died

before the thirtieth day with all the lesions of the disease.

The following conclusions were drawn from the experiments: (1) Scurvy can be produced in guinea pigs with regularity by feeding a liberal and varied diet consisting of oats, mixed scratch feed, bread, sterilized milk, and hay. (2) Scurvy may be prevented by the daily addition of five grams of green grass or five c.c. of filtered orange, lemon, or grapefruit juice, and cured by larger amounts. (3) The antiscorbutic vitaliment is soluble in water, absolute alcohol, acetone, and commercial ethyl acetate. (4) The antiscorbutic vitaliment cannot be extracted from the partially dried juice by ether, chloroform, or carbon tetrachlorid. (5) The antiscorbutic vitaliment differs from the beriberi preventing vitaliment in the following particulars: (a) The antineuritic vitaliment is absorbed by finely powdered animal charcoal. The antiscorbutic vitaliment is not so absorbed. (b) The antineuritic vitaliment is not so precipitated by phosphotungstic acid. The antiscorbutic vitaliment is not so precipitated, but is probably destroyed. (c) The antineuritic vitaliment is a nitrogenous base. The antiscorbutic vitaliment is apparently non-nitrogenous. (6) By means of solvents an extract has been prepared which is suitable for further chemical study.



# Unguentine



An ideal surgical dressing for the treatment of burns, wounds, chronic ulcers and any abrasions of the skin or mucous membrane. It has an antiphlogistic, mildly astringent, antiseptic and stimulating action.

This is demonstrated by the almost immediate relief from pain when applied to an injury, the prevention of mild and restriction of acute infection, formation of healthy epithelial tissue from the edges of the wound, and the healing of chronic ulcers.

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### RESISTANCE

The most acceptable measurement or indication of resistance and recuperation is a high Red Cell Count and Hemoglobin Index.

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5 cc. contains 64 Mg. (1 grain) Iron Cacodylate in sterile stable solution acceptable to the blood stream

Proves the most positive and prompt method of increasing red cells and hemoglobin.

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Chlorosis  
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### NEW YORK INTRAVENOUS LABORATORY

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Producing Ethical Intravenous Solutions for the Medical Profession, Exclusively.



## Bryn Mawr to Hold Second Workers' School

By vote of the joint administrative committee of the Bryn Mawr Summer School for Women Workers in Industry, a second session of the school will be held next summer.

The first summer school held at Bryn Mawr from June 15 to August 15, had an enrollment of eighty-two students. Next summer the number of students will be increased to one hundred and a certain proportion of 1921 students will be allowed to return. The interpretation of the term "women workers in industry" to mean those who work with the tools of their trade in industry will be maintained. However, it has been decided to liberalize somewhat the requirements for the special group of students admitted on the basis of leadership in industry. This last group will, in 1922, as in 1921, be selected very carefully by a committee with Miss Mary Anderson as chairman.

In order to round out the work of the school from an educational point of view, a study of workers' education, in particular women workers' education, will be undertaken during the winter under the direction of Miss Ernestine Friedmann, the executive secretary of the Summer School, who will visit various centres of learning. Furthermore, it has been decided to obtain the help of an educational expert who in the summer of 1922 will study the methods of the school from an impartial point of view.

The scholarship plan of sending students to the school in 1921 will be retained in 1922. Mrs. Gifford Pinchot of Milford, Pa., will again be national finance chairman. She will be assisted by local finance committees in the districts from which the students will be recruited. It is planned to include in the membership of these committees active alumnae of Bryn Mawr, representatives of labor and women interested in the Bryn Mawr project.

## Labor Union Insures Members

The International Brotherhood of Electrical Workers at their recent 16th annual convention provided for a life insurance for their members on the group insurance plan. This is one of the first of the labor unions to insure their members. The union conducts its own insurance, admits all members of one year standing without physical examination and graduates the amount of insurance up to \$1,000.

## School Facilities Considered Inadequate

J. F. Abel, in a paper issued by the United States Bureau of Education, says that more than one-half million additional sittings must be furnished during the single year 1920-1921 if there is to be made provisions for all school children in the schools of fewer than one-third of the towns and cities of this country. During the first part of the present school year a questionnaire was sent to the superintendents of towns and city schools. Eight hundred and fifty-nine, or 66.2 per cent of the towns and cities, with a population of 2,500 and

over, report that they lack adequate school facilities, and add that they must have additional accommodations for 507,524 children, and estimate the cost of building at \$300,000,000. The need is not confined to any one section of the country, nor to any special class of cities. The figures, in proportion to adult population is greatest in the Middle Atlantic States, the states of the old Northwest Territory, second; and New England, third. The figures for the Middle West, South and West are lowest and approximately the same for the three sections. While housing seems to be inadequate in the large cities, there is a great need in the small cities.

## New Haven Athletic Center

A MOVEMENT in which the famous athletes and coaches at Yale University are actively engaged has as its object the training of community leaders in athletic and recreational work so that New Haven's average citizen, the "man in the street," and the industrial worker may benefit at least indirectly from the work of these famous athletes. Dr. James Rowland Angell, the new president of Yale, has expressed himself as in hearty sympathy with the work.

David E. FitzGerald, Mayor of New Haven, is behind the movement also, with the Chamber of Commerce, the Board of Education, represented by Superintendent Frank Beebe, the New Haven Normal School of Gymnastics and other representative local bodies.

Two schools have been opened, one the School of Coaching and the other the School for Training Neighborhood District Recreation Leaders. Recreation covers athletics and play of all sorts. If recreational work of the right sort is to be done, leaders are required.

Thirty men have registered in the school for coaches and are giving their time voluntarily.

The School of Coaching conducted by New Haven Community Service, has for its Faculty Walter Camp, Charles Taft, Berny Tommers, Mosey King and "Izzy" Winters, and these distinguished instructors aim to convey the fundamentals of football, basketball, baseball and boxing to the student coach. Technic, theory, and practical demonstration combine to make the course interesting as well as instructive.

In the School for Training Neighborhood District Recreation Leaders,

Walter Camp deals with sportsmanship and the technic of coaching; Miss Katherine Cronin, Community Service recreation specialist, is lecturing on the subject of age periods and characteristics and suitable activities for each.

Dr. Anderson, the Director of Yale Gymnasium, will talk on the technic of leadership, the qualities of a good leader, and the handling of groups, etc. Organized play for indoor groups and for outdoor groups will be illustrated and there will be model meetings showing the methods of organizing groups for recreational and athletic activities.

Edward Embill, Secretary of Rockefeller Foundation; Dr. E. Hermann Arnold, Director of New Haven Normal School of Gymnastics; Henry J. Schnelle, Director of Recreation in Public Schools and Public Playgrounds; C. F. Northrop, Boy Scout Executive, and others will be active in the instructional work at the school. Sixty-eight members have registered as neighborhood recreational leaders.

The work of organizing various districts and neighborhoods is progressing, with working committees who will plan and carry through leisure-time activities in their own districts. Ten leagues have been formed embracing seven hundred boys, with sixty men cooperating, these comprising officials, managers and captains of teams.

The Board of Directors is a most representative one, including every shade of religious opinion and politics. Clergy of every denomination are on the board, a judge of the Supreme Court, bankers, professors and prominent labor men.



Lunchroom—Wilson and Co.

## Make It Your "First Aid"

You recognize, of course, the great value of a warm, wholesome, nourishing noon lunch as a builder of reserve energy; why not do what thousands of other "guardians of health" are doing in industrial plants, schools and large retail establishments, making the lunchroom their "first aid" as a builder of loyalty, satisfaction and greater efficiency.

## VITROLITE TABLE TOPS

are notable for their widespread use. There are reasons—they are the definition of whiteness itself, crystal smooth, with a flinty hard surface that defies all stains and food acids. They can be cleaned in a jiffy with a damp cloth. They save all table covers and the expense of laundering. They last a life time.

*Interesting data is yours  
for the asking*

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An advertisement worth the reading of any interested in the purchase of sterilizing equipment—and directed particularly to those seeking the most for their expenditure.

WITH all eyes centered upon Price, the purchasing power of the American dollar has never been so taxed as it is today.

We sense that you are not immune to the price appeal in the purchase of your equipment. You are seeking the very most your money will buy—and rightly so. It is, therefore, a source of keen satisfaction to us to know and be able to prove that

**AMERICAN**  
A PRODUCT OF SPECIALISTS

### Sterilizers and Disinfectors

at present prices represent the greatest Sterilizer and Disinfectant value obtainable. Notwithstanding the fact that they cost more to manufacture, due to the use of finer materials, more searching tests, more scientific and precise shop and machine work, more exacting inspection, and are consequently worth far more to the owner, they are sold today for less per unit of value than any similar apparatus made. Greater skill, greater specialization, greater achievement do not make the "AMERICAN" cost more—they do make it worth more.

And the purchase price, low as it is, is greatly lessened in the after years of uninterrupted service because of low maintenance and operating costs. Your dollar has been creditably spent when it goes for "AMERICAN" apparatus.

Descriptive bulletins, engineering data and specialists' counsel are free for the asking.

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## Behaviorists in Community Work

The behavioristic attitude is stated by William A. White, in the January issue of *Mental Hygiene*, to have been the direct means of identifying psychology as one of the biological sciences. In the study of normal psychology the objective approach is a necessity. The behavioristic attitude carries this observation method over to man. The method was distinctly warranted because the introspection of the older psychologists had become sterile when it came to having anything helpful to offer in the solution of man's vital problems of living. Mental reaction supplemented psychological adjustments, hence the failures of life came to be regarded as inability of the individuals concerned to meet the conditions imposed upon them by their environment, largely their social environment. Variations in conduct from social standards are merely more or less inadequate reactions of adjustment.

The whole matter is adequately summarized under twenty-five principles: (1) The organism is a complex of action patterns; (2) Man is what he does; (3) Perception, thinking, and feeding are but actions in process of adaptation; (5) The process of adaptation is the process of development and evolution; (6) All action implies tendencies and counter tendencies; (7) Therefore, what a man does he wishes to do; (8) The psyche is the head end of the organism and its history is the history of the relation of the organs; (9) The psyche is the final grouping of the action patterns integrated to serve the organism in its function as a unity; (10) The motives that lead to asocial and anti-social conduct are relatively undeveloped and infantile; (11) These motives lie in the unconscious; (12) Modern psychology places great emphasis upon the unconscious; (13) Society is an organism; (14) Maladjustment is always a psycho-social problem; (15) Its correction may be approached by trying to change either the individual or the environment, or both; (16) Changing the individual requires a knowledge of the internal evidence to elucidate the nature of his personal difficulties; (17) The internal evidence includes the evidence from the unconscious and the evidence from a clinical examination of the bodily organs; (18) Changing the environment is calculated to adjust it to the limits of the individual; (19) The environment includes social institutions that are far from perfect; (20)

Repression and elimination are only negative ways of procedure; (21) Punishment needs to be studied scientifically as a means for conditioning conduct; (22) A positive attitude of education and helpfulness is needed in addition; (23) The principle involved is that the individual and society are like machines composed of parts. The attempt should be made to bring the parts into more harmonious mechanistic adjustment to the end of a better

utilization of the energy; (24) The problem should be approached in a scientific frame of mind. Sentimentality is and sympathy may be dangerous, antipathic emotions are distorting, understanding and wisdom are essential; (25) These are the trouble men of the social corporation and should be looked to for the clear and disciplined thinking, that will be of aid in bringing about better conditions.

## Baltimore Nutrition Study\*

BY AN arrangement with the school board of Baltimore County, systematic medical examinations are made of the pupils of the public school by the Public Athletic League. If the examination fails to reveal any remedial defects, the child is awarded a "Health First" button, signifying that he is in perfect physical condition. In addition, a letter of commendation is sent to the child's parents, complimenting them for their care and interest regarding their child's health. If the physician does discover one or more remedial defects, but not of a nature to exclude him from participation in athletic activities, he is awarded a green button, which certifies the physician's permission to participate in general athletic activities. The parents are notified regarding these defects and urged to have them remedied. After

a brief interval, the visiting nurse visits the home of the child, to learn if the defect has been corrected, and if not, to help make arrangements to have this work done.

Incidentally, the examining physicians have undertaken a little research work in regard to nutrition, as indicated by height and weight in relation to age. In this connection, 4,372 children were weighed and measured, and the results tabulated, as per table shown. The height and weight tables published by the United States Government, prepared by Dr. Thomas D. Wood, were used throughout the study. As the summaries reveal, 20.08 per cent of the girls examined were 10 per cent or more underweight, while only 16.22 per cent of the boys were 10 per cent or more under weight for their height and age. The combined results show that 17.93 per cent of the children were under weight.

\*Printed by courtesy of the American Physical Education Review.

### EXAMINATIONS OF BOYS AND GIRLS, BALTIMORE COUNTY

High Schools	Girls Examined	Number Under-weight	Per Cent Under-weight	Boys Examined	Number Under-weight	Per Cent Under-weight
Catonsville	269	60	22.30	347	77	22.19
Franklin	116	31	26.72	198	28	14.1
Sparrows Point	262	47	17.93	319	51	16
Towson	204	33	16.17	197	25	12.7
Randallstown				100	16	16
Totals	851	171	20.09	1,161	197	16.76
Elementary Schools						
Arbutus	34	7	20.6	25	2	8
Colgate				67	6	8.9
Essex				118	12	10.2
Fullerton	119	28	18.8	211	32	15.16
Garrison	24	4	16.66	41	16	36.36
Glyndon	27	5	18.5	37	8	21.6
Halethorpe	41	10	24.3	50	12	24
Hehville				34	5	14.7
Lakeland	67	11	16.4	79	8	10.1
Lansdowne	127	29	22.8	147	12	8.2
Lutherville	17	7	41.9	23	1	4.3
Owings Mills	98	22	22.4	56	13	23.2
Phoenix	30	5	16.7	36	4	11.1
Pikesville	159	31	19.5	107	18	16.8
Riderwood	16	13	28.2	34	8	23.5
St. Helena	174	33	18.9	103	20	19.41
Timonium	21	9	37.5	34	11	32.35
Warren	39	4	10.3	69	10	14.49
Totals	1,086	218	20.07	1,274	198	15.54
Totals of High and Elementary Schools	1,937	389	20.08	2,435	395	16.22

## THE MILK PROBLEM IN SCHOOLS

It is important in serving milk to young and growing children and youths to give the proper percentage of butterfats in each and every glass served.

This cannot be done when milk is served by the old style dipper, pitcher or tank method. With such service some get the cream and others get the skim milk.

### THE LYONS SANITARY MILK URN

is the accepted method of modern milk service. With this urn each and every glass of milk that is drawn contains the same and proper percentage of butter fat. This is accomplished by a simple but effective float tube which draws off exactly the right proportion of "top milk" for each glass, without mixing or agitating mechanism.

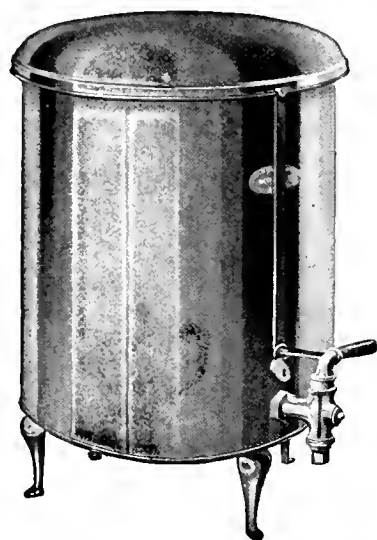
It makes no difference whether the milk remains in the urn 2 minutes or 24 hours. All you need to do is place the day's supply of milk into the urn and draw it out through the faucet as you need it.

The Lyon's Urn is easily cleaned, and thoroughly sanitary. The insulated walls maintain exactly the right temperature. The milk will always be sweet, clean, cold and fresh.

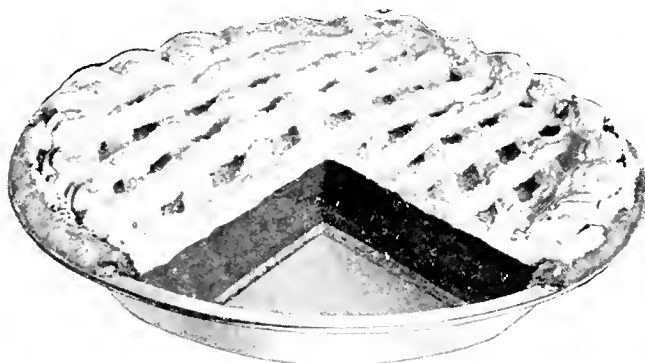
Another striking feature of the Lyons Urn is that the cover and faucet can be locked after each meal.

### LYONS SANITARY URN CO.

235 East 44th Street New York City



The Lyons Sanitary Milk Urn is unexcelled for use in school and industrial cafeterias, diet kitchens, mess halls, Hospital Wards, Institutions, and for general service.



### FAVORITE in the dining room

#### Chocolate Pie Made With GUMPERT'S CHOCOLATE PUDDING

AND no wonder! Gumpert's has such a delectable, satisfying taste, such a tempting, rich flavor, such an appetizing color and creamy consistency that it delights the most critical.

### SAVING in the kitchen

A nine-inch pie can be filled with Gumpert's Pudding for only six cents. The ingredients—chocolate, cocoa, eggs, milk, starch, salt and flavoring—are in powdered form. Just add water, sugar; and boil. Pour into baked shells, and top with meringue.

S. GUMPERT & CO.

Bush Terminal

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# GUMPERT'S

*Chocolate Pudding*

## Social Resources of the United States

A "Handbook of Social Resources of the United States" has just been published by the American Red Cross. It was prepared primarily for the use of the Red Cross workers and those in need of data on educational, health, nursing, social service, recreational, civic and community services for social improvement. Neither the temporary and local agencies are included, nor agencies doing work abroad, insurance, fraternal and other associations are included. It is in fact a coordination and correlation of the national agencies which are working together or apart as the case may be to develop and further their various schemes of construction and reconstruction. We note with surprise the omission of some of the health or medical organizations. The American College of Surgeons, while a professional group, has extensive plans which in their unfolding will affect vitally many of the issues of the future. However, some of the more technical associations are indexed and available through the publications of the American Medical Association.

A publication of this sort which states clearly and concisely the activities and purposes of the many different agencies should do much toward assisting the closer integration of existing social work and eliminate at least some of the unnecessary inquiry and duplication.

American Red Cross, Washington, 1921.

## Mind and Work by Charles F. Myers

Present day application of psychology as affecting labor and as calculated to overcome individual unrest by the employment of rational methods to arouse the interest and initiative in the workman finds an excellent statement in "Mind and Work," by C. S. Myers. He gives the why and the how of movement study and fatigue analysis. The value and application of selection study, and the conscious and unconscious restriction of output by employer or employee are discussed.

Vocational psychology can only be advisory, not compulsory, save when it is applied to select the best applicants for a vacant job. It cannot successfully be imposed on workers without their cooperation. Hence workmen must come to desire it as a preliminary to the systematic instruc-

tion in the trades which must replace present haphazard opportunities for learning if they are to assume the dignity of a vocation.

To secure the changes necessary in present methods, the fundamental requirements of the men come first, and Myers considers the cooperation of the trade unions as essential, and as a further earnest of their efficient application he considers that an independent National Institute of Psychology and Physiology as applied to commerce and industry is essential. The book is quite the best summary of the subject we have seen.

G. P. Putnam's Sons, New York, 1921.

## Functional Diagnosis

Functional diagnosis has become of late an important part of medical practice. The book on this subject by Max Kahn is therefore very timely. The present volume is complete, in a way too complete, in that it enters into minute details of tests long discarded. The authors show a profound knowledge of their subject and in most cases present the technique as well as the interpretation of tests in a simple, readable style. The book forms a valuable addition to medical literature.

W. F. Prior Company, Inc., New York, 1920.

## Assessment of Physical Fitness

This book is an effort to reduce to mathematical formula the correlation of vital capacity—that is, the maximum amount of air exhaled in a single expiration following a maximum inspiration,—with certain other single physical measurements, such as (1) body weight, (2) length of trunk, (3) circumference of chest.

The author tabulates his series of measurements so that, his premises being accepted, the vital capacity in a given test may be quickly determined. A patient is rated as depressed in health if his vital capacity is 10 per cent less than that of his class and is considered as definitely abnormal when he registers 15 per cent below the average of his class.

The book is of vital interest to all who are concerned with physical education or race betterment, but if only for the simple reason that it makes no allowance for the personal equation, it cannot be considered final for arbitrary classification as to physical fitness.

Paul B. Hoeber, New York, 1921.

## Year Book of Anesthesia and Analgesia

The science of anesthesia received the same stimulus and impetus to develop during the World War that the science of surgery and medicine received and, like them, did develop. The American Year Book of Anesthesia and Analgesia for 1917-1918, edited by Dr. F. H. McMechan, which has recently appeared, contains several articles which mark definite advances in their respective zones. The reviewer is pleased to note many articles which do not deal with purely clinical or empiric factors, but which have issued from the laboratory as well as from the anesthetizing and recovery rooms.

Surgery Publishing Co., 1921.

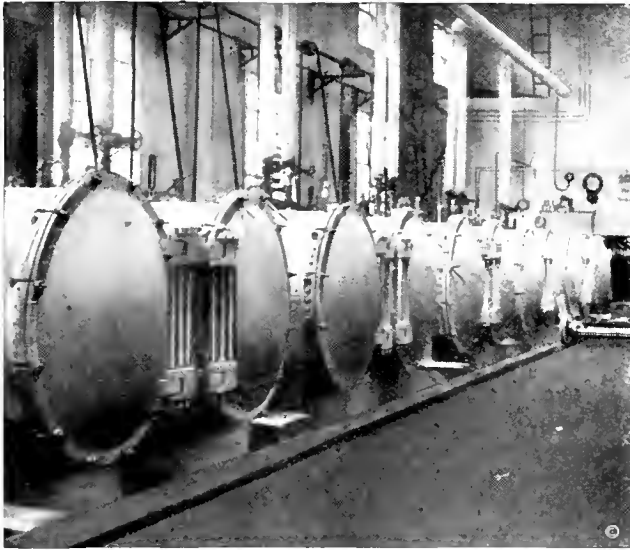
## Transactions of American Child Hygiene Association

The transactions of the American Child Hygiene Association for the year 1920 have been published in pamphlet form and contain the addresses and discussions which took place at the St. Louis meeting. The presidential address sounds the need for membership, for cooperation, information and efficiency. One of the great accomplishments of the year, the formation of a council for Coordinating Child Health activities is spoken of. Mr. Hoover with his national and international ideas and contacts yet so "close to the great tragedies of child life in a great laboratory of mass action" develops a program for American children that the nation has an obligation and responsibility toward the children not based alone upon human aspirations but on the necessity to secure physical, mental and moral health for national, economic and social progress. The complexities, as he says, are not to be solved by governmental action alone, although it does much, but "When all public interest has expended itself, child development still rests with parents and parents need much waking up. Much can be done by waking the public conscience in every community. Much still remains to be carried out by action from the state in its local as well as national phases."

The problems of prenatal, maternal, and infant care, of the pre-school age, and adolescence as well as the vital and social statistics and health plays are all given detailed discussion.

Franklin Printing Company, Baltimore, 1921.





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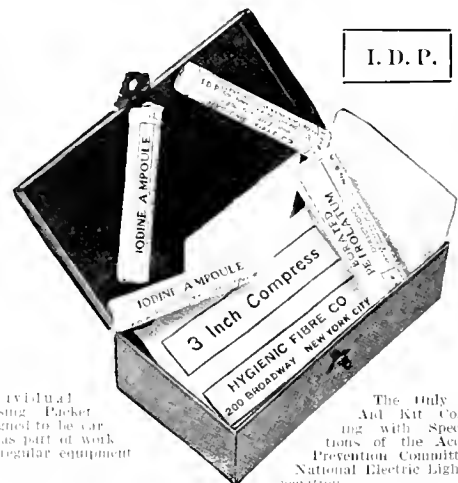
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## American Dietetic Association Meets

The fourth annual meeting of the American Dietetic Association, held in Chicago, October 24 to 27, 1921, presented in addition to the usual range of subjects on general dietetics and problems of administration a series of sociological studies which brought out the difficulties of dietaries which run counter to food prejudices, either racial or from habit. The clinical applications of dietetics occupied a section. The therapeutic phases of child feeding were especially illuminated by Dr. A. L. Daniels in her talk on "The Dietary Needs of a Children's Hospital." Fallacies in regard to food poisoning were uncovered by Dr. John Street, whose address gave highly practical suggestions with regard to food buying and food storing. The role of appetite with reference to nutrition was handled by Professor A. J. Carlson, of the University of Chicago, whose monumental research on the control of hunger in health and disease speaks for his authority on the subject.

The outlook on the whole subject is promising in view of the earnest

study of the subject as a specialty by nurses on whom ultimately the physician needs must depend for the intelligent handling of prescribed dietaries.

## Congress of the American College of Surgeons

The recent Congress of the American College of Surgeons was notable for the spirited discussion of health versus new methods in medical and surgical treatment and in organization of medical service, as well as in the general trend of scientific research. Announcement was made at the meeting that a \$500,000 research academy as a monument to American surgery and as a tribute to the Late John B. Murphy, will be erected by the College on a site adjoining the Chicago home of the American College of Surgeons. The officers elected for the ensuing year were Drs. Harvey Cushing, Boston, president; Henry Sherk, Pasadena, Calif., first vice-president; and George P. Miller, Philadelphia, second vice-president. One new member of the board of regents was chosen and four re-elected: Daniel F. Jones, Boston, new member; George W. Crile;



Dr. John B. Deaver, newly appointed president of the American College of Surgeons.

Alexander Primrose, Toronto; Albert J. Ochsner, Chicago, and George E. de Schweinitz, Philadelphia. The next meeting will be held in Boston. Seven hundred and nineteen surgeons from all parts of the country were inducted into the College by the president.

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## Clinical Laboratory Service For Physicians

The part that laboratory methods now play in the daily work of physicians is set forth in a recent editorial in the *Journal of the American Medical Association*, with a comment on the growth of laboratories of health departments and in hospitals to meet the constantly growing needs of physicians. The editorial rather deprecates the necessity that so large a proportion of this work must be entrusted to technicians and voices the demand that increasing facilities for this form of laboratory service shall be marked by no lowering of standards. The laboratory features of the proposed health centers or of institutions financed and controlled by the community promise an ideal service to the physician, but unless their organization methods and control are in fact actually in standards and practice controlled by the organized medical profession, the physicians are not properly discharging their responsibility to their patients. Any effort whereby clinical laboratories are multiplied to meet existing needs and are kept up to reasonable and fair standards is to be commended.

## Dr. George Hoyt Whipple Goes to Rochester

George Hoyt Whipple, M.D., director of the Hooper Foundation for Medical Research at the University of California, and recognized as one of the leading pathologists in the country, has accepted the position of dean of the new College of Medicine, Dentistry and Surgery, now being organized in the University of Rochester (New York) on the nine-million-dollar foundation established by George Eastman and the General

Education Board, as agent of John D. Rockefeller.

Dr. Whipple was born at Ashland, N. H., on August 28, 1878, the son of Ashley and Frances Hoyt Cooper. He received a bachelor of arts degree at Yale in 1900 and was graduated from the Johns Hopkins University Medical School in 1905 and 1906 he was an assistant in pathology in the medical school of Johns Hopkins and for two years following that he acted as an instructor there under Dr. Welch.

In 1907 he went to Panama, where he was the pathologist of the Ancon Hospital, but he returned to Baltimore the next year to act in the same capacity in the Bay View Hospital. In 1909 he was made an associate in pathology at Johns Hopkins and was made an associate professor with Dr. Welch in 1911.

In 1914 he went to the University of California as a professor of research medicine. He also was appointed director of the Hooper Foundation of Medical Research, a branch of the medical school of the University of California maintained in memory of George William Hooper by his wife. He is a member of the American Society of Experimental Pathology, the Association of American Physicians, the American Physiology Society, the American Medical Association, International Association of Medical Museums, Sigma Xi, Alpha Omega Alpha, Phi Delta Kappa, Beta Theta Pi and a member of the Committee on Scientific Research of the California State Council of Defense.

Dr. Whipple has expressed himself as particularly interested in developing facilities for the care of part-paying municipal cases as an adjunct to the proposed medical school. Community service should be so utilized, however, as to contribute toward the turning out of the type of medical

practitioners, the sort who will through their investigative work develop both the means and the interest successfully to handle the larger phases of medicine and to contribute the large science of public health.

## Goes to Bureau of Chemistry



Keystone View Co.

Dr. Wm. W. Skinner has been appointed assistant chief of the Bureau of Chemistry, Department of Agriculture.

Dr. Wm. W. Skinner has been given immediate charge of the scientific and research work of the Bureau of Chemistry, Department of Agriculture. This is one of the largest scientific organizations in the country, with between six and seven hundred employees. Dr. Skinner is a graduate of the University of Maryland and George Washington University and has pursued special studies in the University of Arizona and the University of California. He was for four years assistant chemist of the University of Arizona and has been associated with the Bureau of Chemistry for seventeen years.

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### The Control of Life

TO THE fear often expressed that scientific discovery, the development of machinery, and the world wide conditions of commerce and finance will concentrate wealth and power more and more in the hands of the few, J. Arthur Thomson in "The Control of Life" answers, that what we need is more science and that it is for lack of applied scientific knowledge we "muddle along, making all sorts of anachronistic and gratuitous mistakes."

It is obvious common sense to bring to bear on the problems of man's betterment the resources of the modern science of biology. While the present stage of our knowledge of Mendelian inheritance does not permit the predictability of types, genetic control is quite possible in certain innate or constitutional diseases, such as diabetes, epilepsy, feeble-mindedness, and glaucoma—which may be transmitted from generation to generation. So may determinative peculiarities of environment or nutrition, habits and occupation be detected and preventive measures, scientifically directed, look toward their control. An enlightened understanding of the limitations and dishar-

monies of man's constitution should enable individual standards of health which would insure a fair measure of resisting power to the invasion of disease-germs and other deteriorating influences, for, individually and collectively, we are called upon to pay our physiological bad debts. "Given an understanding of natural inheritance and the influence of nurture, given a pride of race and a pride in having a vigorous family, given an enthusiasm for health, many more positive methods of 'improving the breed' will occur."

Progress in evolution, of course, means a preponderance of strong fine types. Economic questions are involved with the growth of populations. The present tendency in all civilized countries toward declining birth rate is looked upon with alarm by eugenicists, but so far a relative balance has been maintained among peoples. A high birth rate is almost inevitably attended by a high death rate. Self-control and forethought in marriage and child bearing marks a superior people. Birth control is not "race suicide" but race-saving, according to Thomson. Mere carrying on is not progress. There must be increasing realization of fundamental

values. Obstacles and hindrances to the development of higher types that will be staple and persistent will be overcome only by a fuller realization of the physical and biological preconditions which secure those types.

This book by Thomson is a distinctly worth while consideration of the broader aspects of the correlated facts of science and their application to practical problems.

Henry Holt & Co., New York, 1921.

### Austrian Women Combine on Health Work

The important women's organizations of Austria have combined to form the Women's Anti-Tuberculosis Society of the Red Cross of German Austria, in order to check tuberculosis, which is especially prevalent among the growing generation. The objects of the society are to obtain money for carrying on the work, train women for service in connection with sanatoria, and do educational work.

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## Life Training is Planned for Orphans

From cradle to workshop the American Argonne Association, under the supervision of Dr. Royal Stross Haynes of Columbia University, is taking two hundred French war orphans. The aim of the Association, as reported in the *Chicago News*, is to bring the best fruit of American science and sociology as a contribution to the orphan problem in France, demonstrating how to give the children more personal continuous care and education than is now possible for the same amount of money.

The Association was founded soon after the armistice by Dr. Haynes, who, then associated with the Red Cross, has now perfected an institution that is sustaining and educating its charges at the actual cost of about one hundred and fifty dollars annually in American money, including all expenses except the capital investment.

The peculiar feature of this institution especially interesting to sociologists is the fact that the children are under continuous direction from infancy until they leave to take a job. In all other dependent children's in-

stitutions the children are obliged to jump from institution to institution, and hence there is no continuity or plan in their education.

Dr. Haynes has endeavored to try this experiment in the United States, but was unable to do so because it would require a rearrangement of existing institutions. However, France, with nearly one million war orphans, demanded new workers and new methods.

## Surgeon General Orders Clinic at Army Hospitals

Surgeon General Merritte W. Ireland has given instructions that wherever material is available a clinic be held once a week in army hospitals and attended by all medical officers. All interesting cases are to be presented, examined and discussed. Demonstrations are also to be given in operating-room technic, new procedures in laboratory methods, and in roentgen-ray laboratories. In all those cases terminating in death the officers are to be assembled for discussion of the pathologic report and the clinical findings. Conferences frequently on sanitation and communicable diseases are ordered in all the army hospitals.

## Medicolegal Decision in Communicable Disease

A recent Alabama case came up under the Legislative Act of 1919, page 936, Section 17, Subdivision 15, Adm. Act October 12, 1903, which authorized the isolation of persons having communicable diseases in hospitals, and the Act of 1919, p. 936, Sec. 17, Subd. 16, which authorizes the establishment of a hospital for the isolation of persons having a contagious disease. The Court held that persons having a contagious disease can only be quarantined in a hospital and cannot be confined in a jail. Especially is this true where they have given bond their appearance to answer the criminal charge which has been made against them. It is added that in order to prevent the spread of contagious and infection, the legislature can, under its police power, establish quarantine and authorize governmental agencies to enforce all reasonable ordinances necessary to attain the desired results, including the segregation or isolation from the public, either in their homes or hospitals, or camps prepared for that purpose, of persons afflicted with contagious or infectious diseases.



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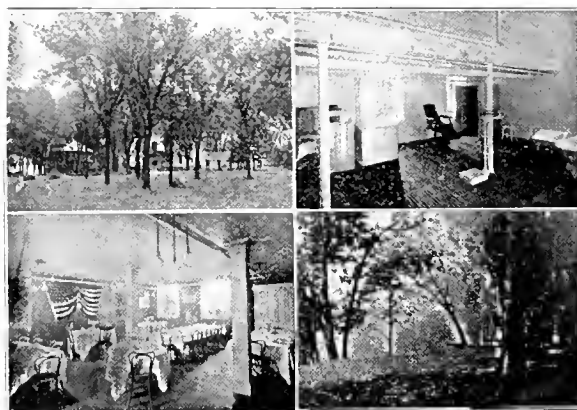
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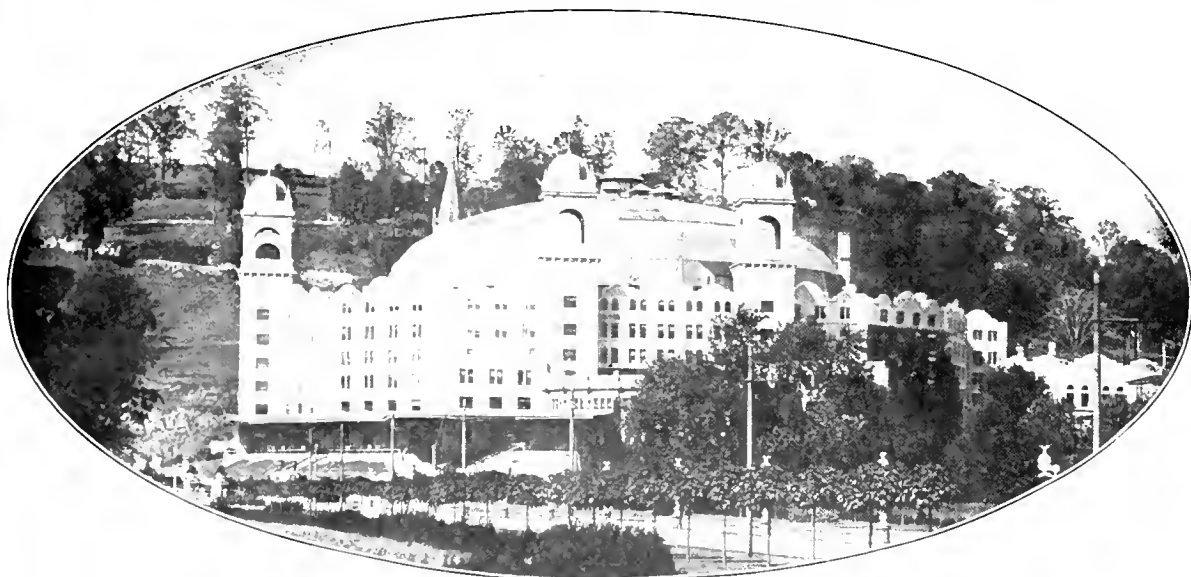
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